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CULTURAL RESOURCES REPORT NO. 23

USDA Forest Service
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PAPER NUMBER THIRTEEN

An Archeological Survey of the San Mateo Mine Area
Cibola National Forest, New Mexico

By
J. Richard Ambler

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INTRODUCTION

At the request of, and under the terms of a contract with Teton Exploration Drilling Company, Inc., Northern Arizona University conducted an intensive archeological survey of the San Mateo mine area, located about 15 miles north, northeast of Grants, New Mexico. The area surveyed is part of the Cibola National Forest and under mining claim by United Nuclear Corporation and their subsidiary, Teton Exploration Drilling Company. It lies in Northern Valencia County, and is composed of all of Section 30 and parts of Sections 29, 31, and 32, T13N, R8W, at a longitude of 107°43'W, and 35°19'N latitude (Figure 1).

The San Mateo Mine, a shaft uranium mine, operated for more than a decade but the last of the buildings were being removed during the summer of 1976. In order to check on the feasibility of re-opening the mine, United Nuclear and Teton Exploration plan a number of drill holes to gauge the depth and quality of the ore-bearing deposits. Since each drill hole requires archeological clearance under U.S. Forest Service regulations, it was deemed more efficient and economical to have the entire area surveyed so that archeological site locations would be known, and future drill holes could be located so as to have no impact on the archeological resources. The holes themselves do not have the potential of as much damage as the platform and holding basins associated with the drill rig, as the construction of each pad involves the bulldozer alteration of several thousand square feet of surface, enough to completely obliterate many sites.

After a brief vehicle reconnaissance of the area, a field camp was established near the center of Section 30, and the actual survey was conducted on foot. Sites were numbered sequentially in the order found, with site numbers assigned in the Northern Arizona University site numbering system. All sites are within New Mexico quadrangle H:10. Site locations were marked on aerial photographs supplied by Teton Exploration Drilling Company. These photographs, at a scale of 1 in. = 200 ft., proved to be invaluable for plotting site locations, and with such a large scale, even individual features of each site could be plotted without difficulty. Site records were made at each site and most sites were marked with 18-inch painted reinforcing rods and/or painted 3-foot, 1 1/2-inch pipe. Smaller sites were marked with a single rebar or pipe, whereas larger ones were often marked with several rebars around the perimeter and a pipe near the center. Most sites are free from danger if no construction is carried on within 50 feet of any marker. Marking sites in this manner does make them more visible to pothunters, but this was not felt to be a problem in this instance because vehicle access to the area can be gained only through a locked gate. Surface collections were made at only a few of the larger sites, where disturbance was obvious, so as to leave the surface material intact at the smaller sites.

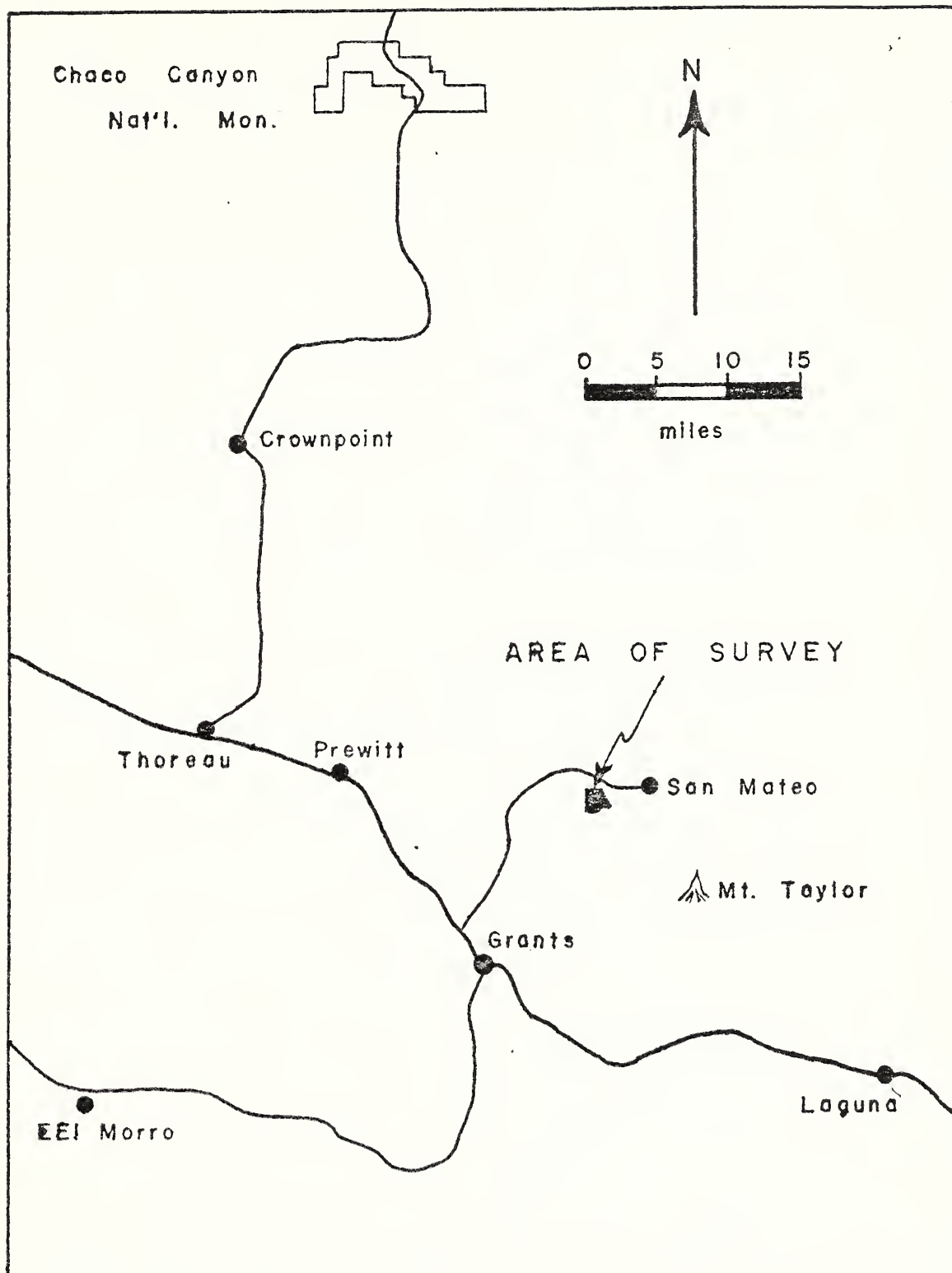


Figure 1. Location of survey.

The survey was initiated on July 12, 1976, and completed on July 25, 1976. Field personnel consisted of the author and Patricia Langford (now Patricia Ambler). If we had worried about keeping to an 8-hour day, 5-day week, the survey would have taken at least a week longer.

ENVIRONMENTAL BACKGROUND

The area surveyed is on the southwest side of San Mateo Valley. The opposite side of the valley is formed of sandstone buttes and mesas, but the area of this survey had been covered by several hundred feet of basaltic lava flows from Mount Taylor, 10 miles to the southeast. The south boundary of the survey area is formed by the edge of the basalt plateau that remains of this flow (La Jara Mesa), at an elevation of 8,000 to 8,140 feet. North of this basalt escarpment the elevation drops to about 7,000 feet at the northeast corner of the area surveyed. In between, most of the area is hilly, cut with S-N trending canyons, until the flat valley is reached. Occasional sandstone outcrops occur, but most of the hills are covered by basalt remnants ranging in size from pebbles to boulders. In between the rocks, especially in protected areas, sandy aeolian soil, derived from nearby sandstones, is present.

Most of the area is covered by a fairly dense pinon-juniper forest, although the lower, flat areas are open grassland, and ponderosa pine and oak occur at the higher elevations near the escarpment. Pinon-juniper forest covers the top of La Jara Mesa, attesting to the comparatively low precipitation in this area.

Like the rest of the Southwest, the prevailing winds are from the southwest, and the frost-free season is too short above 7,000 feet for corn agriculture. The area surveyed can be divided into several broad environmental zones (Figure 2), and each of these have several different micro-environments. These broader zones, and the smaller ecotones within them, are directly related to the distribution of archeological sites and the nature of those sites.

Starting at the southwesterly edge of the area surveyed, the basalt escarpment of La Jara Mesa and the talus below it form what I shall call Zone 1. The vertical wall can be negotiated in several spots and game trails pass through these places. It is not hard to envision hunters waiting at the top for a deer to pass by. On the western part of Section 31, the basalt cliff is separated from the talus by a wide bench on top of a crumbly sandstone cliff. Directly above this bench are two of the easiest access routes up to La Jara Mesa. The bench itself supports numerous ponderosa pine and oak. Elsewhere, the steep (45°) talus comes right up to the base of the cliff, and is covered by pinon-juniper forest, with oak and ponderosa at the base of the cliff.

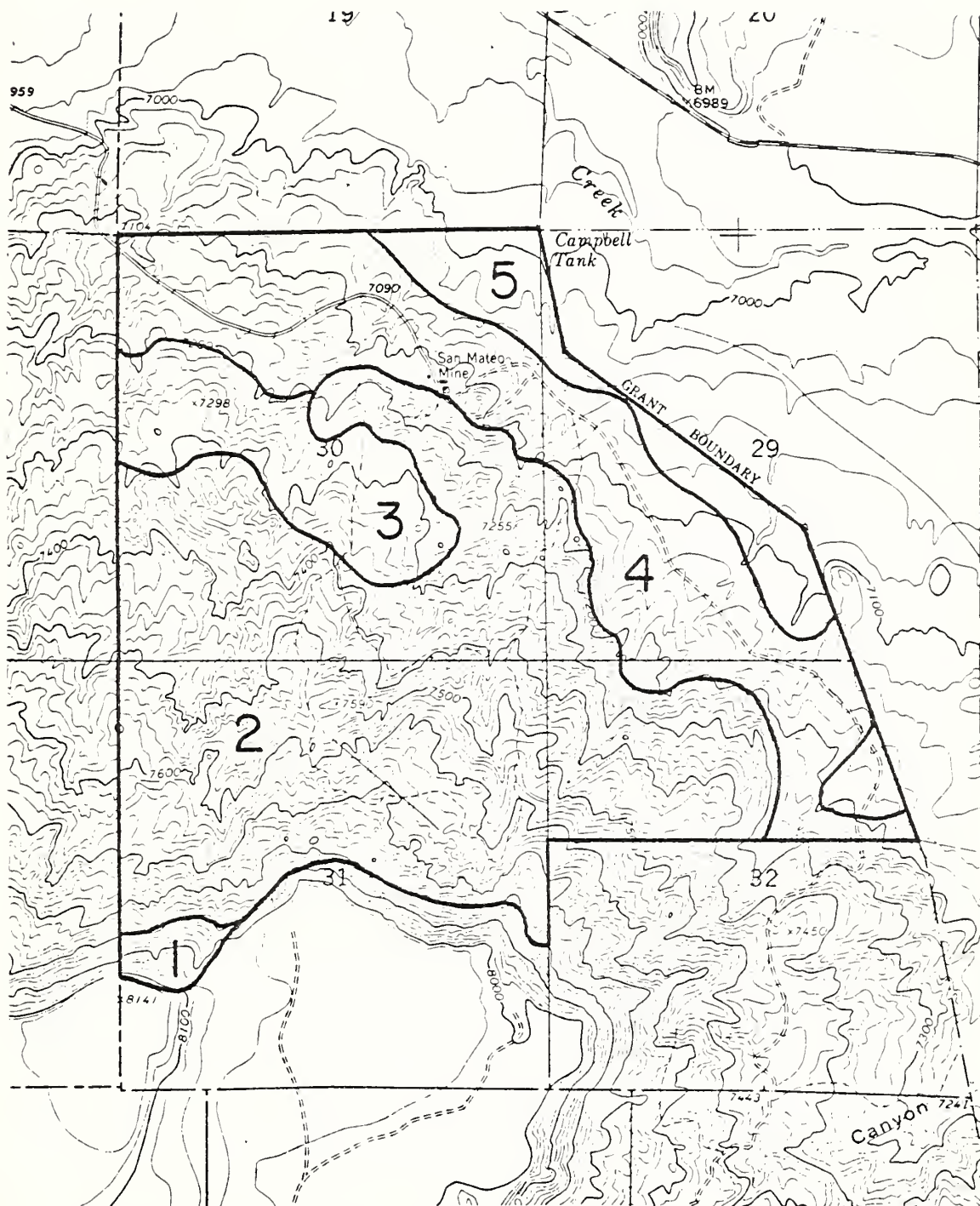


Figure 2. Environmental zones within area surveyed.

The talus drops for about 100 feet (40 m.) and gives way to S-N trending ridges and valleys (Zone 2). Most of these are steep and rocky, but here and there, usually on the lee (NE) side of a ridge, are relatively flat sandy spots usually 10 to 30 m. in diameter. One very large, but steeply sloping, sandy area lies in the east half of Section 31. The steep ridges and valleys comprise most of the area surveyed, from an elevation of 7,800 feet on down to between 7,300 and 7,100 feet. On the east, in Sections 29 and 32, the 600-foot drop occurs within about $\frac{1}{2}$ mile. The hills are not so steep in the west, and much of the central and northwest portion of Section 30 is occupied by large nearly flat sandy areas, some of them bare of trees (Zone 3). This zone lies at an elevation of 7,100 to 7,400 feet.

Below the steep hills on the northeast side of the area surveyed are low sandy ridges and valleys, some covered with trees, others bare (Zone 4). This zone, at an elevation mostly between 7,050 and 7,200 feet, overlooks the flat, treeless plain of the main valley (Zone 5). Zone 5 is cut by a large arroyo along the northwest side of Section 29.

Pinon-juniper forest forms the dominant vegetative type and most of the area is also covered with grama grass. Other grasses are present but not common. Ponderosa occur near the escarpment and in sheltered areas with more subsurface moisture as occasional trees down as low as 7,200 feet. A rare cottonwood occurs in some stream beds, along with other moist soil vegetation such as willow. Oak are found mostly near the southern escarpment. Four-winged saltbush, ephedra, and winter fat occur in lower treeless areas. Willow and tamarisk occur on some of the steeper slopes and in dammed up places near the mine in Section 30, but it is probable that they can only make it there because of alterations of the surface. Tumbleweeds abound in the flatter area of Zone 5. Cholla occurs in a few locations and prickly pear is common, although not abundant. Lycium was occasionally noted, especially on sites.

Permanent water is not found today within the area surveyed; although, one canyon on the west side of Section 30 has some subsurface water as evidenced by the mesic vegetation. The nearest permanent water is near the center of the valley, at springs about $\frac{3}{4}$ -mile northeast of the northeast edge of the survey area. These springs, coming out of the valley alluvium, help feed San Mateo Creek, which flows westward to within $\frac{1}{4}$ -mile of the northeast corner of Section 30. Other springs are present near the base of the escarpment, 2 to 3 miles to the southeast.

The most noticeable mammalian is rabbit. It was not unusual to see a score of cottontails and jackrabbits everyday, and the ground in many areas was almost covered with rabbit pellets. Rabbits were most

common in Zones 3 and 4, but occurred everywhere. Also observed were deer and a bobocat. Coyotes were heard and their tracks occasionally noted. Tracks of skunk and badger were also seen. Common birds include nighthawks, red-tail hawks, ravens, and a host of smaller birds. Horned toads and several other species of lizards are present. Small flies were a pest many times, but mosquitos were rare even after numerous rains. Perhaps the most ubiquitous and aggravating fauna are the small black ants. It was impossible to sit down anywhere without being swarmed by them, and around camp they became so obnoxious that we finally had to resort to "Raid" despite our misgivings about pesticides. Large red ants are also common but these co-existed with us with no problem, even though one large nest was only a few feet from our tent.

For the prehistoric people of the area, important environmental resources would have been pinyon nuts, occurring periodically over almost the entire area; acorns at the high elevations; arable land, found in Zones 3, 4, and 5; and rabbits and deer over the entire area.

Wood for structural purposes or fires is common everywhere except in Zone 5, and water is close enough to not be any great trouble. Building stone is plentiful but is practically all basalt. This basalt breaks up into somewhat tabular forms that can be laid up into masonry walls, but is not nearly as easy to build with as sandstone, and is nearly impossible to shape. A favored location for a dwelling was on the top of a hill; thus, hilltops can be considered a resource. None of the sites appear to be particularly defensive in nature and hilltops may; therefore, have been chosen for better drainage, more breeze to keep the flies away, ease of throwing trash down the hill, the view, or any combination of these or other reasons.

The rocky hills are very difficult to walk on, especially wearing sandals, so the sandy areas formed important routes to the higher elevations and favorable places to camp. Ants were probably at least as much a problem to the prehistoric people as they were to us. Perhaps periodic burning and/or digging of their small nests would keep them down to a bearable level.

Much of the land surface of the area surveyed has been extensively altered in recent times. The introduction of cattle appears to have resulted in more erosion, but this is minor compared to the activities connected with mining. Numerous roads traverse the area, mostly leading to drill sites. Mining activity is particularly prevalent in the northeast $\frac{1}{4}$ of Section 30, where roads, borrow pits, tailing piles, and other major earth-moving activities have completely altered the surface contour of approximately 70 acres. This major disturbance obviously resulted in the destruction of several archeological sites, and probably more were formerly present, although no remnant

is now visible. Elsewhere, however, with a few notable exceptions, the roads and drill sties do not appear to have had serious adverse effects on the archeological resources.

Some pothunting was noticed, but in only a few instances was this seriously extensive, and none of the pothunting was recent. The limited access to the area has undoubtedly resulted in better protection for these sites compared to many in other areas. One site appeared to have been deliberately destroyed by a bulldozer.

ARCHEOLOGICAL BACKGROUND

The San Mateo Mining Claim lies within a region archeologically known largely by extension from surrounding areas. In the 1930's Gladwin excavated a number of sites in Red Mesa Valley (the upper Puerco) about 40 miles to the west that provide a baseline that later investigators have acknowledged, if not followed, at least in part (Gladwin 1945). About 50 miles to the north, northwest is Chaco Canyon which has received a lot of archeological attention for almost a century. Much of this work has been on the large late PIII sites, however, and it is the excavations at the earlier and simpler PII-PIII sites that have the most relevance to the San Mateo area (e.g., Kluckhohn and Reiter 1939; Brand, Hawley, and Hibben 1937; Dutton 1938; Bradley 1971).

The closest work to the survey area was some highway salvage archeology done in the Grants-San Mateo area in the late 1950's by the Museum of New Mexico. Unfortunately, the reports on these excavations have yet to be published. However, some of the highway salvage work in that area has been published (Wendorf 1954a, 1954b; Peckham 1963), and aid in understanding the prehistory of the area. In the early 1950's, El Paso Natural Gas Company constructed several pipelines to the south and west of the San Mateo area, and archeological excavations conducted during the course of that work have perhaps the most relevance to the materials found during the survey (Wendorf, Fox, and Lewis 1956).

On the basis of the pipeline excavations, Wendorf (1956: 5-6), Wendorf and Lehmer (1956: 188-95), and Olson and Wasley (1956: 257-8, 284-5, and passim) revised both Gladwin's pottery types and his phase sequence for the area.

Unfortunately, most of the information on which these revisions were made was recovered from sites up to 60 miles away from San Mateo, so the relevance of their schematic to the area covered by this survey is unknown. Lacking excavated data for the San Mateo area, Gladwin's types and sequence, as later modified by Wendorf, Lehmer, Olson, and Wasley, has been followed as a general outline.

A more detailed discussion of the pottery found during the course of this survey will be found following the site descriptions.

Generally, these types are those recognized by Wendorf and Lehmer (1956) and Olson and Wasley (1956). Common types include Red Mesa Black-on-white, Escavada B/W, Gallup B/W, Exuberant corrugated, Coolidge corrugated, and Tohatchi neck-banded, all generally occurring during Pueblo II and early Pueblo III. In the case of many sites it is not possible to closely define the time of occupation, but some sites can be specifically identified with a particular level of development. Because of the difficulty in assessing the relevance of phases that have been defined 50 or more miles away, these are referred to in terms of the Pecos classification. Early Pueblo II is defined on the presence of Red Mesa B/W, Escavada B/W, and Gallup B/W, and neck-banded and corrugated gray ware, and is roughly equivalent to Gladwin's Red Mesa Phase. Common pottery types of late Pueblo II sites include Escavada B/W, Gallup B/W, Red Mesa B/W, Exuberant and Coolidge corrugated, and Tohatchi neck-banded, and has no equivalent in Gladwin's system, although corresponding to Wendorf and Lehmer's (1956: 258) Ceramic Group 5: Late Red Mesa Phase. Early Pueblo III equals the Wingate Phase, and is characterized by less Red Mesa B/W and the introduction of Wingate B/R. No major late Pueblo III or Pueblo IV sites were encountered, although some historic Navajo sites were found and several sites appear to be earlier than Pueblo II.

Our marginal knowledge of the Pueblo archeology of this area is demonstrated by the fact that Gladwin places it barely within the south-east corner of the Chaco branch, whereas Bullard (1962) places it in a no-man's land between his Chaco region and the Red Mesa region, and it appears that Wendorf and Lehmer (1956) would include it within their Puerco branch, and others seem to include it within a "Cibola" branch. The situation has not been appreciably clarified as yet. It is only possible to say that on the basis of the pottery recovered, the San Mateo area Anasazi had their closest relationships to the Anasazi of the Puerco and Chaco drainages. Ceramic contacts with the central New Mexican area, or even the Acoma-Laguna area, seem to have been minimal.

SITE DESCRIPTIONS

Eighty archeological sites were found during the course of this survey, and one additional site was recorded immediately outside the survey area in Section 32. The precise locations of these sites are available to qualified scholars through the U.S. Forest Service.

Individual sites are described below. All numbers bear the prefix New Mexico H:10: and in map summaries are simply listed by last number. Elevations are rounded to the nearest 10 feet. More detailed site data is on file at Northern Arizona University and Cibola National Forest.

H:10:1. Elevation: 7300. The site is on the edge of a ridge overlooking small sandy valley to the east. It consists of two crude masonry rooms, probably temporary farm houses, built among and on large boulders

(Figure 3). Three Exuberant corrugated sherds were noted on the slope below the rooms. A few more sherds were found slightly to the NW, and may belong to the same site.

H:10:2. Elevation: 7360. The site is located on top of a 50-foot high hill or ridge end, overlooking a farmable valley to the NE and another to the SE. At least two masonry rooms are present, with a possible third room 10 m. to the N, evidenced by a rectangular slab-lined hearth, but no masonry. Sherds are scattered around the rooms, primarily downhill to the east. Most of this is Exuberant corrugated, some is Coolidge corrugated, two are Tohatchi neck-banded, and a few small B/W sherds were noted.

H:10:3. Elevation: 7430. This site consists of one small masonry room, with the NE corner of the room still standing 110 cm. high. This wall was of unshaped basalt slabs, and is 40 to 60 cm. thick, the east edge of the doorway is in the north wall, only 23 cm. from the inside corner. The room was built at the southeast end of a ridge, overlooks a small amount of possible farmland, although the elevation here may have precluded successful agriculture. Six B/W sherds with the design mostly worn off were found, plus one corrugated. The room had been somewhat disturbed by carnivores digging after packrats, who had a nest in the NW corner of the room. A pile of rubble 40 m. NW may represent another room, but no walls could be defined and no trash was present.

H:10:4. Elevation: 7390. A fairly large pile of fallen wall stones indicates the presence of one or two rooms, located on top of a high hill with an excellent panoramic view. Sherds were sparse, consisting of a few corrugated, one neck-banded, and one Escavada B/W.

H:10:5. Elevation: 7360. This site is located on a rocky-sandy bench about halfway down a hill toward the neighboring small canyon. One room is visible, the walls of which never apparently stood very high, judging from the lack of fallen stone. The room may have been triangular or D-shaped. Two corrugated sherds were found nearby.

H:10:6. Elevation 7450. This site is located atop a low hill, surrounded by sandy knolls, and consists of enough tumbled rocks to indicate one or two masonry rooms. Only one sherd (plain gray) was found.

H:10:7. Elevation: 7430. This site is on the west side of a ridge, on a small promontory overlooking a small canyon to the west. This canyon, near and for several hundred yards below this site, contains more mesic vegetation than elsewhere in the survey area, but no standing water except for about two days after each rain. The promontory the site is on is about 3 m. below and 30 m. west of the ridge top, so the view to the E is obstructed, but it is still possible to see the top of Mt. Taylor and to the NW. The site consists of certainly one masonry room and possibly two (Figure 4). The room is oriented



Figure 3. Masonry rooms built among boulders. New Mexico H:10:1, looking northwest.



Figure 4. Small masonry pueblo. New Mexico H:10:7, looking southwest. Standing walls are rare.

NE-SW with the east corner of this room still standing about one m. high. It averages 30 cm. thick with the rocks lined up neatly on the outside and uneven on the inside (although formerly it was probably chinked). The edge of the doorway, in the SE wall, is 90 cm. from the east corner. Sherds were moderately plentiful--mostly corrugated, some Gallup B/W and one Escavada B/W.

H:10:8. Elevation: 7300. This site is in the midst of a large nearly flat sandy area. The roomblock, consisting of two basalt masonry rooms, is on a slight rise. Scattered sherds are downslope to the E and NE. About two dozen sherds were observed, mostly corrugated, several Gallup B/W and one Escavada B/W.

H:10:9. Elevation: 7140. The site is on the north end of a low rocky ridge at the point where the ridge runs into a gently sloping sandy area. The size of the room rubble indicates at least two rooms, possibly three. One wall, oriented N-S, has been exposed by a 1x2 m. pothunter's hole. About two dozen sherds were scattered downslope to the E and NE. These included several Gallup B/W, Red Mesa B/W, and one Escavada B/W.

H:10:10. Elevation: 7300. To the east, the terrain is sandy and nearly flat, and to the west of the site the ground is rockier, sloping toward a major wash. The site consists of one room, 220x230 cm., built among several large boulders, utilizing the boulders as the lower parts of the N, W, and S walls. Some masonry remains standing, up to four courses high. To the east, within 6 m. of the room, were found 7 sherds, from two pots-- one exuberant corrugated, one Puerco B/W. There is some animal disturbance on the N side of the room, where something tried to dig a packrat out.

H:10:11. Elevation: 7190. The site consists of a thin scattering of sherds and chert flakes over an area about 20 m. in diameter. The area of the site is sandy, sloping to the east. No definite structural remains are visible, although several basalt rocks near the NW edge of the area could be the remains of a room. Sherds include 11 corrugated from two different pots, two Gallup B/W, and one Escavada B/W. The area of the site has been disturbed, but probably only superficially-- trees have been cut, and heavy equipment has been driven through. A slight arroyo is starting on the south side of the site.

H:10:12. Elevation: 7180. This site consists of a pile of masonry rubble (basalt and occasional sandstone), representing one or possibly two rooms. It is located on the eastern crest of a low sandy ridge. Only one sherd, Gallup B/W, was found. The room(s) had been disturbed on its NW side, where a "road," actually little more than a bulldozer cut, had removed the NW corner of the room.

H:10:13. Elevation: 7220. This site is historic Navajo, and consists of a hogan, another possible hogan, a corral, a lambing pen, and trash. The hogan, 3 m. in diameter, was built between two small junipers, by

crudely laying up various sizes and shapes of rocks up to an average height of 30 cm., and completing the superstructure with axe-cut pinon and juniper logs and sticks, a few of which remain. The entry appears to have been to the S, and outside the hogan to the south are burned rocks, lots of burned bone, a broken grinding slab, two small pieces of sheet copper, parts of two broken bottles, a tin can, a vesicular basalt mano, a table knife blade, and two irregular chunks of purple quartzite. Behind the hogan are the remains of an umbrella, and further downslope, to the E, are fragments of another bottle and two Tohatchi neck-banded sherds.

The second hogan appears to have been little used. It was built among several large boulders, with smaller rocks piled up to complete the 3 m. diameter circle. No roof is evident. The entry is to the E. The lambing pen was built between two large rocks, and is now occupied by a packrat nest. The corral is about 20-25 m. in diameter, formed by crude fence of juniper posts, only a few of which remain. The site is located in a sheltered cove-like spot on the east slope of a ridge, and could only have been reached by horse or foot, as no wagon route is present. The entire site area appears well used--many of the trees have old axe cuts, and some are only stumps. This was one of the few places found that had noticeable quantities of cholla cactus. A guess date for the site would place it at between 1890 and 1920.

H:10:14. Elevation: 7200. This site is on essentially the only sandy area on the NW slope of a very rocky ridge. The site consists of a semicircle of vesicular basalt rocks, 305 cm. in diameter. About a dozen rocks are present, spaced about 30 cm. apart. The semicircle is open to the SW, or uphill. Within the circle are several more rocks and an area of ashy sand about 35 cm. in diameter. Judging from the extensive lichen growth on the rocks, they have been there a long time. The site "feels" earlier than PII, and may be Archaic. No artifacts were found.

H:10:15. Elevation: 7120. The site consists of a circular arrangement of stones built in and around several large boulders. The walls are fairly crude, and it is difficult to characterize them as masonry. The interior diameter averages 2.4 m. No artifacts were found, and it is therefore difficult to date the site. It appears to be PII-III, but could be Archaic.

H:10:16. Elevation: 7100. This site is located on the NE end of the same ridge as H:10:15, although separated from it by a deep road cut. The site consists of a pile of collapsed building stone probably from one room, but possibly two. Further down the ridge, about 15 m. to the NE, are several upright basalt slabs that appear to be in two parallel rows about 70 cm. apart. These look like BMIII-PI storage units, but could be almost anything. The only artifacts found appear to be associated with the room rather than the slabs, as they were down the hill and east of the masonry rubble. Only four sherds were found, from two different Gallup B/W vessels.

H:10:17. Elevation: 7100. The site consists of apparently one room, of basalt and a few sandstone slabs, on the N end of a small ridge. Only one sherd was found, an Escavada B/W. The entire area around the site has been bulldozed, including the east edge of the site, although the room itself appears undisturbed.

H:10:18. Elevation: 7090. The site consists of a very light scattering of sherds from three different vessels - one Red Mesa B/W, the other two unidentifiable B/W. A few rocks are sticking up out of the sand here and there, but no definite structural features were observed. The site appears to be intact, but may be only a remnant of a once larger site, as the surrounding area has been badly disturbed.

H:10:19. Elevation: 7290. Located near the north edge of a large flat, open area, the site apparently consisted of one masonry room and associated trash to the east, but the structure had been deliberately destroyed by a bulldozer. There is no construction right at the site, but the bulldozer cut neatly took out the room, and only the room. About 20 sherds were observed, most of them B/W, but also four corrugated and one plain gray. The B/W sherds are from at least six different vessels-- two Dogosahi B/W, two Gallup B/W, one Escavada B/W, and one unidentified B/W.

H:10:20. Elevation: 7320. Located near the western edge of the flat area the site consists of one or two rooms of tumbled masonry on a small hill. Only one sherd, an unidentified B/W, was found. The site had been disturbed by someone driving a bulldozer over it, but fortunately the blade wasn't lowered.

H:10:21. Elevation: 7380. Located on the top of a high hill the site consists of a small pile of basalt masonry rubble that probably represents one room, possibly two. The rubble has been somewhat potted on the NW side. For the amount of masonry, there is a relatively large amount of trash mostly downslope to the E. About 80 sherds were noticed, including about 50 corrugated and 30 B/W. Sherds collected from this and other sites are listed in Table 1. One vesicular basalt mortar was also found.

Perhaps because of the magnificent view from this site, coupled with its small size yet apparently heavy usage, it appears that this site may have been important, perhaps ceremonially. Arable land is present to both the E and W of the hill, but there are other site locations (and sites) closer to potential farmland that do not appear to have been used nearly as extensively.

H:10:22. Elevation: 7380. Located near the SW end of the large flat area the site is on a slight sandy rise, and consists of masonry rubble and light trash to the NE. One possibly two, rooms are present. About two dozen sherds were observed, including about 10 corrugated and 10 B/W, including five Gallup B/W, three Escavada B/W, and one Red Mesa B/W.

H:10:23. Elevation: 7710. The site consists of a sparse sherd scatter in a large nearly flat sandy area. The sherds, from at least two B/W bowls and one corrugated jar, were found scattered over an area about 30 m. in diameter. No structural remains were found.

H:10:24. Elevation: 7690. Located down the same ridge as H:10:23 in a smaller sandy area, the site consists of two ash-filled hearths about 20 m. apart. The SW hearth is more clearly defined, and is an oval outline of "round" vesicular basalt rocks, 130x85 cm. No artifacts were found near it. The size of the lichen growth on the rocks indicates considerable antiquity. The other hearth is more nearly circular, 120 cm. in diameter, and parts of the perimeter are formed by small upright basalt slabs. Three Coolidge corrugated sherds are adjacent to the E edge of this hearth. Other hearths may be present, but are poorly defined if so.

H:10:25. Elevation: 7570. The site consists of a single ill-defined hearth on a rocky N-sloping ridge. The hearth is "outlined" with large rocks in a circle 1 to 1.2 m. in diameter, with many smaller ones and ashy sand in the center. No artifacts were found.

H:10:26. Elevation: 7290. Site consists of two possible rooms that are very poorly defined and do not appear to have been true masonry. Both rooms are built in and against large boulders. Two sherds were found, both undecorated portions of a B/W jar.

H:10:27. Elevation: 7020. Located near the principle mine dump on a low hill overlooking the flat valley to the NE. One or two masonry rooms are present, with light trash around, especially to the east. About two dozen sherds were observed, including Coolidge corrugated, plain gray, and several Gallup B/W, and two Red Mesa B/W. The site has been somewhat disturbed by earth-moving machinery on the E side and one small pothole near the center of the roomblock, but otherwise is miraculously intact, considering its proximity to various mine operations.

H:10:28. Elevation: 7040. This poorly defined site is on the NE end of a low ridge. The main evidence of a site is the presence of sherds from at least three pots-- one B/W, one neck-banded, and one white ware. Three of these sherds were found in a bulldozer cut, the fourth higher on the ridge to the NW, where a possible structure, although apparently not masonry, is located.

H:10:29. Elevation: 7090. This site is one of the larger ones located during the course of the survey, consisting of a six to ten-room masonry roomblock (Figure 5), a noticeable kiva depression with retaining walls, hundreds of sherds and flakes, and a large basalt boulder with many petroglyphs (Figure 6). The roomblock is located on top of a prominent hill overlooking the flat alluvial plain to the NE. The kiva is immediately downslope and E of the roomblock. Trash extends to the base of the hill in the wash to the SE. A large boulder to the S of the kiva has petroglyphs of parrots and other birds, quadrupeds, hands, etc., as well as someone's name and a 1928 date. Other disturbance includes a small pothole in the kiva



Figure 5. Large masonry pueblo, looking toward kiva depression and roomblock. New Mexico H:10:29, looking west.



Figure 6. Petroglyph at New Mexico. H:10:29.

depression and some slight digging near the center of the roomblock. An E-W bulldozer cut crosses the hill immediately N of the roomblock, but doesn't appear to have disturbed much. A tremendously large cut about 25 m. W of the site also doesn't appear to have hurt it.

Sherds were collected at H:10:29, and are listed in Table 1.

H:10:30. Elevation: 7060. The site consists of one room and light trash on a small rise about 130 m. NE of H:10:29. Half a dozen sherds (B/W and corrugated) and two flakes were observed. The room has an old pothole in the center.

H:10:31. Located on the flat alluvium immediately N of a large rectangular tailings pile (settling ponds). About ten sherds (B/W, gray, corrugated) were found scattered over an area about 50 m. in diameter. Most of these sherds were found in disturbed areas, and no evidence of structures was noted. This site may represent farm-houses or outwash from sites further south.

H:10:32. Elevation: 7090. The site is on a sandy hill and has been badly disturbed by roads and earth-moving activities. No structural rock is now visible. About two dozen B/W and corrugated sherds were noticed, especially downslope to the E.

H:10:33. Elevation: 7050. This was apparently once a large (ten room) site that has been practically all destroyed except for two room remnants and scattered sherds. Sherds collected are listed in Table 1.

H:10:34. Elevation: 7040. Located N of H:10:34, this site consists of several dozen sherds scattered over an area 50-70 m. in diameter. This area had been bulldozed or graded, and there is no telling where the actual site is--perhaps these sherds were originally associated with H:10:33. This is one of the few sites found that would not merit additional investigation, even if the site were to be destroyed, since the entire area has been extensively and deeply disturbed.

H:10:35. Elevation: 7160. Located at the N end of a large hill immediately E of the mine, the site consists of at least six stone circles--there may have been more prior to a major disturbance on the SE side. The circles are formed by loosely piled rocks, and are about 165 to 250 cm. in diameter (Figure 7). From the patterns of lichen growth on the rocks, the circles are of at least fair antiquity, and definitely not recent Navajo. Subjectively, they appear to be Archaic. The artifacts found are not much help, three pieces of (Coolidge) corrugated were found, but two were some distance away and none may be truly associated. One red chert flake was also observed.

H:10:36. Elevation: 7290. Located in a rolling sandy area, the site consists of a single hearth on the NE side of a small sand hill. The hearth is roughly circular, 85 cm. in diameter, outlined with vesicular basalt rocks, and has ashy sand in the center. No artifacts were found, but the good lichen growth on the rocks suggests considerable age.



Figure 7. Archaic (?) circular rock arrangement. New Mexico
H:10:35, looking east.



Figure 8. Navajo structure at New Mexico. H:10:38, looking west.
Diameter, 340 m.

H:10:37. Elevation: 7250. Located in a nearly level cove-like area E of and below large open area. The site is a historic, probably early 1900's, Navajo site consisting of a wooden hogan (all fallen down), several circular rock outlines, probable corral area, ash, and trash. The juniper trees are all chopped, many are dead, and the whole area looks heavily used. Trash is concentrated to the E of the hogan, but also is found in other areas, and consists of burned bone, purple, green, and brown glass bottles, Anglo ceramics, tin cans, a shoe, and two Pueblo (Hopi) sherds. This site, like H:10:13, could only be reached by horse or foot.

H:10:38. Elevation: 7240. Another Navajo site, just down the hill NNE of H:10:37, this site consists of one hogan, represented by a circle of crudely piled stones (Figure 8) 340 cm. in diameter. Immediately to the east of the hogan is an ashy area, and some brown glass was found nearby. This area was not nearly as heavily used and abused as H:10:37--not as many trees are chopped, and there is no evidence of concentration of sheep.

H:10:39. Elevation: 7090. This site occupies the crest of a long sandy hill that extends NE from the basalt-covered hills. The site consists of sherds (100+) and flakes scattered over an area about 70x100 m. No structural evidence is visible--perhaps pithouses are present on the ridge top. Sherds are most prevalent where the site has been disturbed (i.e., destroyed) by a road and a drill pad. Several days of testing at this site would reveal if structures are present, and if so, several weeks may be necessary for complete excavation.

H:10:40. Elevation: 7070. Located further NE along the same ridge as H:10:39, some sandstone rocks mark the apparent location of structures, although they do not appear to be masonry, and were possibly pithouses or jacal structures. Three to five structures, and possibly a kiva, appear to be present. Light trash is scattered downslope from the probable structures, and consists of B/W and corrugated sherds. The site is partly disturbed by a drill hole on the north side.

H:10:41. Elevation: 7070. Located along the top of a long N-S ridge this site appears to have two components, the major and earlier one being Archaic. This is characterized by a thin scattering of flakes (obsidian and chert) along the ridge top. The larger flakes are easily visible, and almost every ant hill contains numerous small finishing flakes. Two bifacially chipped but irregular objects, one knife fragment, and one broken San Jose-like point were noted. Some pottery (7 sherds) was also found near and downslope (E) of the central portion of the site. No structures are evident.

H:10:42. Elevation: 7090. This site is located right at a drill hole; in fact, the drilling activity seems to have entirely destroyed the site. Sherds (B/W and corrugated) in and around backdirt and disturbed ground, but nowhere else.

H:10:43. Elevation: 7110. Located on the W bank of an arroyo about a dozen sherds were found eroding out of the top bank. No structures are visible.

H:10:44. Elevation: 7120. This site may have two components. A relatively large number of flakes were found, most of obsidian, and most weathering out of a roadbed. Two possible hearths are on the crest of the ridge. About 10 or 12 B/W and corrugated sherds were also observed.

H:10:45. Elevation: 7110. Located in a generally flat area which slopes to the NE. The site consists of about two dozen B/W, plain gray, and corrugated sherds and some flakes scattered over an area about 50x70 m., although heaviest in a much smaller area. No structures are evident.

H:10:46. Elevation: 7160. Being close to a new drill pad, the masonry portion of this site had been noted before this survey. One masonry room is evident on a low rise, but trash extends along the base of the basalt-covered hills for more than 100 m. It is possible that the masonry room was only the most southern part of a major block of structures (pithouses or jacal) at the base of the slope. A slight depression and heavy growth of Lycium may indicate the presence of a kiva. B/W, plain gray, and corrugated sherds were observed.

H:10:47. Elevation: 7210. Located in a flat sandy area at the end of a ridge above H:10:46, this site consists of two hearths, a circle of crudely piled rocks, and an amorphous area of rocks containing three one-hand manos. The hearth at the N end of the site is a 50 cm. in diameter, circle of stones, and the other is an irregular area of ash and rocks 1.5 m. in diameter. Ten flakes but no sherds were found.

H:10:48. Elevation: 7270. Located higher up the same ridge as H:10:47, in a steeper and rockier place this site is historic, presumably Navajo, and consists of three roughly circular arrangements of crudely piled rocks, without lichen growth on them, about 320 to 350 cm. in diameter. One circle has remnants of axe-cut juniper and pinon poles. Artifacts found include a broken ceramic cup and fragments of a green bottle. This site looks more like a hunting camp than a permanent or semipermanent habitation.

H:10:49. Elevation: 7360. This site consists of ash-filled hearth in a sandy area within basalt-covered hills. The oval hearth is lined

with small nearly upright slabs, and is 110x130 cm. No artifacts were found, but the lichen growth on the stones indicates the hearth is prehistoric.

H:10:50. Elevation: 7380. Located at a sandy spot this site also consists of a single slab-lined hearth (Figure 9), but not as well preserved as H:10:49. No artifacts were found.

H:10:51. Elevation: 7140. This site is on a small rise about 20 m. NE of the basalt-covered hills. The rise is covered with small basalt rocks, but the only visible structure is circular, about 3 m. in diameter, which resembles those at H:10:48 except that the rocks have much more lichen growth on them, indicating a greater age. About two dozen sherds were observed, including corrugated, plain gray, Gallup B/W, and Red Mesa B/W. Two old pieces of brown glass were also found.

H:10:52. Elevation: 7440. The site consists of two hearths about 14 m. apart. Both are nearly circular rings of vesicular basalt cobbles, 50 to 70 cm. in diameter, filled with ashy sand. One corrugated sherd was noted about 7 m. W of the S hearth.

H:10:53. Elevation: 7530. This site is located on a sloping sandy area just below and E of the crest of a ridge. The N hearth is lined with sloping basalt slabs, and is 120 cm. in diameter, whereas the S one is oval, about 100x120 cm., lined with vesicular basalt cobbles. Parts of an undecorated Cibola White Ware bowl were found about 5 m. NW of the N hearth. Fragments of a Coolidge corrugated jar were found scattered over a wide distance down the draw, as were a sherd each of Tohatchi neck-banded and Red Mesa B/W.

H:10:54. Elevation: 7590. This site consists of a single hearth, with no associated artifacts visible. It is located on a flat and fairly sandy hilltop. The hearth is outlined with vesicular basalt cobbles, with a few small slabs at the S end. Many slabs and cobbles are in the center, giving the appearance that the hearth had been remodeled several times. It is about 140x160 cm. in diameter.

H:10:55. Elevation: 7670. The site consists of at least nine hearths in a sandy rolling swale. Three of these hearths are oval, about 80x100 cm., ringed only by vesicular basalt cobbles. Four others have mostly cobbles, but some slabs, and the other two have only slabs of both basalt and sandstone. It was within one of these slab-lined hearths that several pieces of a Cibola White Ware dipper were found, the only artifacts at the site.

H:10:56. Elevation: 7780. This site, is on a small flattish area on the side of a steep hill. The area is very rocky, and it is difficult to see why anyone would choose this spot for a camp when sandier areas are not distant, except that it is fairly sheltered

from the wind. No structural remains could be identified, although hearths may be present somewhere in the mass of hearth-sized rocks. Cultural evidence consists of about 20 Coolidge corrugated sherds on the W side of the site, and a few sherds from a Red Mesa B/W jar and a Gallup B/W bowl on the E side. Two obsidian flakes were also observed.

H:10:57. Elevation: 7780. The site consists of a single hearth at the N edge of a sandy area. The hearth is circular, 90 cm. in diameter, ringed with vesicular cobbles and a few larger rocks. A single Gallup B/W sherd noted about 50 feet to the W is apparently not associated.

H:10:58. Elevation: 7620. This site is a single large hearth in a small very flat sandy area. The hearth is 165x185 cm. in diameter, ringed with vesicular basalt cobbles. No artifacts were found.

H:10:59. Elevation: 7160. This site is located on a gently rolling sandy hill. The site consists of a sparse scattering of sherds over an area about 30x55 m. in diameter. One hearth-like cluster of stones is present near the W side. It is possible that pithouses are present, but there is no surface evidence of such. About 15 sherds were observed, including one corrugated, several undecorated portions of B/W, plain gray, and neck-banded.

H:10:60. Elevation: 7180. Located along a low sandy ridge. The principal cultural evidence of this site is a scattering of several dozen sherds and chert artifacts, practically all within the roads that intersect at this point. One hearth, with a Pueblo II sherd nearby, is at the SW end of the site. The other sherds indicate that the majority of the site has a Basketmarker III component and a late Pueblo III component. Sherds collected are listed in Table 1.

H:10:61. Elevation: 7450. This site is located on a large flat sandy area. The site consists of a thin scattering of artifacts over an area approximately 30x100 m. Several concentrations of rocks are present, but none could be defined as hearths. Sherds noted include corrugated, Red Mesa B/W, and Escavada B/W. A basin metate and two one-hand manos were found. Chert and obsidian flakes are also present.

H:10:62. Elevation: 7300. This thin scattering of sherds and flakes is on a heavily eroded sandy area about 40x200 m. About 20 sherds, three dozen flakes, a one-hand mano, and a side-notched point that had been reworked into a drill were found.

H:10:63. Elevation: 7150. Located on a slight sandy hill, the site consists of a light scattering of sherds and some flakes. About a dozen small B/W and plain gray sherds were observed. No structural remains are evident, but a few burned rocks may indicate the presence of a pithouse. The site is bisected by a road, which may have cut through a structure.

TABLE 1
Pottery from Selected Sites

Type	Site H:10:	21	29	33	39	60	66	74	78	80
White Mound B/W				2						
Red Mesa B/W	3	17	3				3	6	1	
Escavada B/W	3	13	3				1	4	18	4
Puerco B/W	1		3				2		2	
Gallup B/W	5	23	6	6			11	3	11	2
Gallup-Escavada B/W	1	6							3	2
Unclass. Cibola WW		6		2			3	3	7	
Unident. B/W		1	1							
Wingate B/R									4	
Querino Poly.						7				
Exuberant Corrug.		7	2	3			3	3	2	2
Coolidge Corrug.		3	6	6			2		8	3
Tohatchi Banded		3	3				2	2	1	1
Plain Gray-sherd temp.		9	7	4	2	3	2	2	3	1
Polished Gray-sherd temp.				1						
Plain gray-cr. rock						13				
Plain gray-sand						1		2	2	1
Unident. Brown Ware										1
TOTAL	13	88	36	22	23	30	25	62	17	

H:10:64. Elevation: 7110. This site is located on a low sandy mound in a generally flat area. The site is evidenced by a scattering of about a dozen sherds and a few flakes. No structural remains are evident, but there is a possibility that a pithouse may be present. Escavada B/W, plain gray, and corrugated sherds are present.

H:10:65. Elevation: 7120. This site consists of a definite mound of white sandstone rocks and a small depression about 5 m. SW of this pile of rocks. The rocks look like tumble building debris, but it is in a strange location, on the NW side of a ridge. Only one sherd (corrugated) was found 3 m. uphill. The lack of artifacts makes identification of this pile of rocks questionable as a site, but it appears definitely unnatural, and the rocks have been there a long time. Perhaps it is a stockpile of building stone associated with H:10:66, which seems strange, as there are a lot of rocks exposed on top of the ridge. Perhaps it was a shrine.

H:10:66. Elevation: 7140. This site is located on the crest and down the SE slope of a NE-SW trending sandstone ridge. The site consists of several rooms-- apparently --about five masonry rooms, with perhaps five more of jacal. Downslope (SE) of the main room-block is a kiva depression with dead Lycium in it. Another possible kiva depression is a few meters SW of that. Trash is extensive, with many sherds and flakes present. Sherds collected are listed in Table 1.

H:10:67. Elevation: 7150. Located immediately SE of H:10:66, this site may actually be part of H:10:66, but the sherds are discontinuous between the two areas. This site has no definite structures, and consists of several dozen sherds scattered on the top and down the SE side of a low ridge.

H:10:68. Elevation: 7620. This site consists of at least two hearths, in a fairly large sandy area. One hearth is eroded, but appears to have been like the other, formed of an oval outline of vesicular basalt cobbles (Figure 10), 130x165 cm. in diameter. No artifacts were found.

H:10:69. Elevation: 7790. This site consists of a single eroded hearth about one m. in diameter. It was outlined by vesicular basalt cobbles and a few basalt slabs. One Tohatchi neck-banded sherd was noted about 2 m. SE of the hearth.

H:10:70. Elevation: 7680. This site is located in a large sandy area enclosed by steep rocky hills on the W, S, and SE. The site consists of at least seven hearths, scattered over an area of approximately 4000 sq. m. Six of the hearths are ringed with vesicular basalt cobbles, ranging from 80 to 110 cm. in diameter. The seventh is lined with sloping basalt slabs, and is 130 cm. in diameter. The only artifacts found at this site were associated with this last hearth-- a plain gray sherd was found about 3 m. to the N, and a Cibola White Ware scoop handle is in the ashy fill of the hearth.



Figure 9. Hearth lined with sloping basalt slabs, diameter 110 to 120 cm. New Mexico H:10:50, looking east-southeast.



Figure 10. Hearth ringed with vesicular basalt cobbles, diameter 130 to 165 cm. New Mexico H:10:68, looking northeast.

H:10:71. Elevation: 7380. This site consists of two hearths in a relatively small sandy area. Both hearths are of vesicular basalt cobbles, and are somewhat eroded. One is 80 to 100 cm. in diameter, the other 60 cm. No artifacts were found.

H:10:72. Elevation: 7540. This site is located at the head of a small sandy area. The site consists of a hearth that appears to have been remodeled several times. One unidentified B/W sherd was found near the hearth.

H:10:73. Elevation: 7230. This extensive site is located at the base of the rocky hills, on a rolling sandy area. The site covers almost 10,000 sq. m. and perhaps could be more realistically described as an agglomeration of small sites rather than one large one. The site consists of burned rocks and ash, burned areas, a masonry room, and sherd and flake concentrations. A moderate amount of artifactual debris, in the form of B/W and corrugated sherds, and obsidian and chert flakes, is present, but widely scattered. The burned areas and piles of burned rock are unique to this site, and may represent a specialized processing activity. The difficulty in assessing the original nature of this site is compounded by the fact that a short time before the time of this survey, a new drill pad was established practically in the middle of the site area, apparently destroying part of the site. The site appears to have been used for a number of different purposes, perhaps over quite a span of time. The one masonry room does not have a significant amount of trash associated with it.

H:10:74. Elevation: 7230. The site is located atop a small but prominent sandy hill adjacent to the NW side of a major wash. The SE side of the site is being eroded somewhat by this wash and wind deflation. The site consists of a masonry roomblock of probably three to five rooms, with trash scattered down the steep SE slope and gentler E slope. A slight depression to the east of the room block may indicate the presence of a kiva. Two small pothunter holes are present, but caused little damage. Sherds collected are listed in Table 1.

H:10:75. Elevation: 7230. Located across the wash from H:10:74, this site is on a low sandy hill. No structural remains are visible, the only site evidence being the presence of less than a dozen sherds; B/W, corrugated, and plain gray.

H:10:76. This site, is actually outside the area to be surveyed, but was recorded because some sherds from the site have drifted into the survey area. The site is comprised of two or three masonry rooms near the end of a low ridge, with associated trash downslope to the E. The site has been very badly disturbed by road construction, and possibly some pothunting as well.

H:10:77. Elevation: 7170. The site consists of about 20 sherds (B/W, corrugated) scattered over a flat area of 30x60 m. No structural remains are evident, and most of the sherds were found in areas disturbed by roads or erosion.

H:10:78. Elevation: 7170. This large site is located near the end of a low sandy ridge. The site appears to consist of perhaps 15 rooms enclosing three sides of a plaza containing a kiva. The rooms are delineated by a generally low mound of rubble-- some may be of jacal, the others of sandstone masonry. The room block is probably rectangular in plan, although at present it appears somewhat circular. Quite a bit of trash is present, especially to the SE. The very SW corner of the roomblock has been disturbed by road construction. Little damage was done, but the road should not be widened at this point. Sherds collected are listed in Table 1.

H:10:79. Elevation: 7190. This site is contiguous with H:10:78, and the trash from the two sites merges at the road. The site is slightly further up the same ridge. Two or three basalt masonry rooms appear to be present near the ridge crest, and additional structures may be present part way down the slope. No readily apparent differences in the pottery were noticed, although it is suspected that H:10:79 may be slightly earlier than H:10:78.

H:10:80. Elevation: 7190. Located on a slight rise this site consists of two or three basalt masonry rooms, a possible kiva depression, and scattered light trash.

H:10:81. Elevation: 7180. The site consists of at least two sandstone slab-lined cists located on the SE side of a sandy hill, a few meters away from a major drainage. The remaining cists are 90 cm. in diameter and apparently about 50 cm. in depth. Scattered rocks indicate the former presence of probably two more cists. The slope is eroding somewhat, and even the remaining cists will probably not last much longer. The cists appear to be BMII, but no artifacts were found.

POTTERY AND DATING

Our skimpy knowledge of the archeology of the general region in which San Mateo lies is well exemplified by the contradictions, confusions, and inconsistencies in the typological classifications that have been used in reference to the pottery. With the publication in Pipeline Archeology (Wendorf, Fox and Lewis 1956), some of the discrepancies between the classifications of Hawley (1936, 1939), Gladwin (1945), and Colton and Hargrave (1937) were resolved, and the typology used here attempts to follow the classifications used by Olson and Wasley (1956), Wendorf and Lehmer (1956), Vivian (1959) and Bradley (1971).

It was found to be impractical to follow Hargrave's (1962) classification of the ceramics from the Prewitt area about 20 miles southwest of San Mateo, largely because of the lack of comparative material and the small size of this collection. At first glance, Hargrave's definition of several new wares, series, and types appears to confuse

the issue, but I suspect that he is on the right track. For instance, Red Mesa Black-on-white has been identified as an "indigenous" type from Window Rock to the northern Rio Grande, from late PI to early PIII, and we should certainly be able to pinpoint regional and temporal differences more closely. Without a larger and more controlled collection than represented by this survey, however, it is impossible to use Hargrave's classification.

Some of the above mentioned classifications and descriptions are based on material from 50 or more miles away, and although similarities are apparent, it is expectable that some significant differences may exist in the San Mateo material.

All of the black-on-white pottery, with the exception of two unidentified specimens, appears to be part of the general grouping known as Cibola White Ware, characterized by a hard paste, crushed sherd temper, and iron paint. It is evident from both the published descriptions and this small collection that some variation in temper and paste exists within Cibola White Ware, and it is expectable that a detailed study would isolate some of these variations in space or time.

Type designations are largely based on design differences, and the different typologies largely reflect differing opinions concerning which design styles "belong" to which type. Again, it is probable that detailed studies would more closely delineate the temporal and spatial distribution of particular motifs, layouts, and elements. This collection does not offer such possibilities however, so I have largely followed previous workers. Since even recent workers differ in their type descriptions, a brief explanation of each type follows, with examples illustrated in Figure 11.

Two sherds from H:10:33 are tentatively classed as White Mound Black-on-white. Stylistically, they look like BMIII pottery, but both are sherd tempered and may be sloppy executions of Red Mesa or Escavada Black-on-white. The only sherds herein classified as Red Mesa Black-on-white bear what I would call "late Kana-a" style of design, with parallel thin lines, solid elements, and pendant dots being common. I have excluded the plethora of what I would consider later Pueblo II designs.

Escavada Black-on-white has sometimes been limited to those sherds with simple broad-line designs analogous to Sosi Black-on-White, but I also include the spirals, triangles, and checkerboards that some consider Red Mesa Black-on-white, but that I would consider analogous to Black Mesa Black-on-white. Of key importance here is the definition of the origin and distribution of specific design styles, a problem that needs more careful work not only in the San Mateo region, but in the entire Anasazi area. I suspect that at least part of the reason for the apparent longevity of Red Mesa Black-on-white is due to the general practice of including such a wide variety of styles within that type that temporal and regional differences are obscured. With further work in this area, the typological problems with Red Mesa and Escavada Black-on-whites would hopefully be resolved.

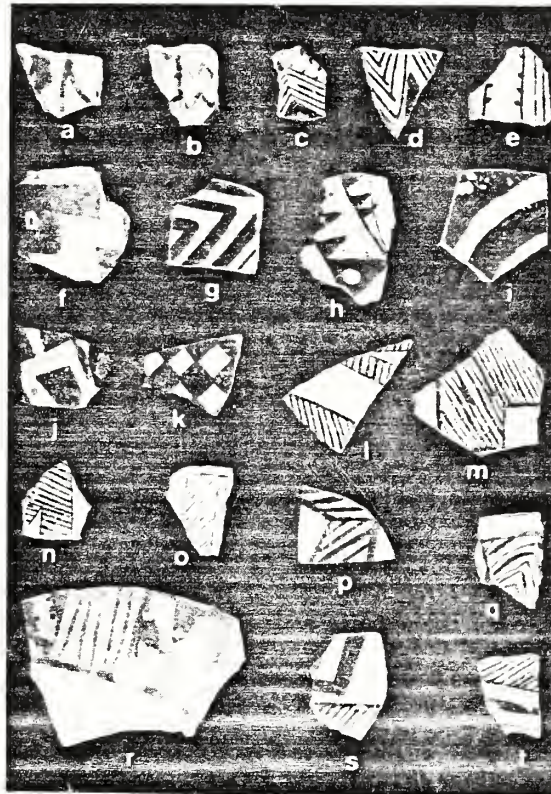


Figure 11. Pottery types. a, b, White Mound (?) Black-on-white; c-e, Red Mesa Black-on-white; f-k, Escavada Black-on-white; l-p, Gallup Black-on-white; q, unidentified; r, Puerco Black-on-white; s, t, Gallup-Escavada Black-on-white.

A few sherds were classified as Puerco Black-on-white. Further work may prove that Escavada and Puerco cannot be consistently separated, as noted by Hargrave (1962) but for the purposes of this report, the description by Olson and Wasley (1956:369-70) was followed, with the "longitudinal hatching" being considered diagnostic.

Gallup Black-on-white is one of the most easily recognized types of this area, with its characteristic hatching. Following most recent workers, Gallup and Chaco Black-on-whites were not separated. A few sherd from the San Mateo mine area are so finely painted that a designation of Chaco Black-on-white would be possible.

Those sherds classified as Gallup-Escavada share the characteristics of both: hatching opposed by solid elements, and by some might simply be called Gallup Black-on-white.

The four sherds of Wingate Black-on-red are so small that identification was difficult and discussion would be fruitless.

The Querino Polychrome sherds are probably all from the same jar painted in red, slipped with a creamy white slip, and painted with black (in that order).

Olson and Wasley (1956:371-4) defined Coolidge corrugated, and their descriptions of that type and Exuberant corrugated have been followed. It is expectable that more detailed study of the corrugated pottery from this area will reveal temporarily and/or geographically significant variations of these types, because variations in temper are easily observed in this collection.

Tohatchi Banded was also defined by Olson and Wasley (1956:385-6), and most of the sherds so defined here can be easily classed as that type. It is probable that many of the plain sherds listed in Table 1 are the lower portions of Tohatchi Banded sherds, especially those with sherd temper. However, plain gray sherds with crushed rock or sand temper were also found, and may be analogous to Lino Gray.

Most of the pottery-bearing sites have an assemblage closely similar to Olson and Wasley's (1956:258) Ceramic Group 5, or Late Red Mesa Phase. There appears to be some temporal difference even within these however, as some (e.g., H:10:29 and H:10:74) have a higher proportion of Red Mesa Black-on-white and more Exuberant corrugated than others, whereas a few (e.g., H:10:78) have a relatively high proportion of Escavada and Gallup Black-on-whites, and more Coolidge corrugated. Most are therefore listed in Table 2 as late Pueblo II, (perhaps around A.D. 950-1000) except those with few Red Mesa Black-on-white sherds, more Coolidge corrugated, and occasional Wingate Black-on-red listed in Table 2 as Pueblo II-Pueblo III (perhaps about A.D. 1050).

SUMMARY AND INFERENCES

Summaries of the environmental zone, type and size of site, artifact density, and stage placement, are presented in Table 2. Figures 12, 13, and 14 show the locations of the major kinds of sites. A comparison of these figures with the environmental zones (Fig. 2) clearly demonstrates that the larger pueblo sites of 5 to 15 rooms and an associated kiva, fairly heavy trash, and probably largely assignable to the Wingate Phase, except for H:10:46, which may be earlier, are all located within Zone 4; smaller pueblo sites are found within Zones 3 and 4; and temporary campsites represented by hearths and/or light artifact scatters are essentially confined to Zone 2. Navajo sites are located in the lower part of Zone 2, close to Zone 4.

An indication of the intensity of occupation of the sites is presented as artifact density, expressed on a scale of 1 through 5, with 1 indicating very few or no artifacts; 2 meaning that 1 to 2 dozen sherds or the equivalent are present; 3 indicating the presence of several dozen sherds; 4 meaning that 100± sherds were observed; and 5 indicating heavy trash. Assuming that artifact density is a direct result of the intensity and/or duration of occupation, it can again be easily observed that the most intensively utilized sites are those within Zone 4.

The differences in site type and distribution can apparently be largely explained on the basis of the obvious environmental factors. Thus, the large sites are located in close proximity to firewood, constructional materials, and probably most important, good farmland. The best arable land of the area surveyed is located where the washes from the steep hills enter the flat plain, for it is here that floodwaters spread out over the deep sandy soils. Some smaller spots of arable land occur within Zone 3, but appear to be less well-watered, and are at an elevation where the growing season would be at best marginal for cultigens.

Arable land is essentially nonexistent in Zone 2, and the elevation would probably preclude agricultural activities even if farmland was available. Sites within Zone 2 appear to have been occupied for only short durations, presumably during hunting and/or gathering expeditions. The most abundant resources of Zone 2 are pinon nuts, deer, and rabbits, and some oaks occur close to and within Zone 1. I find it easy to visualize families camping at the higher elevations in order to gather pinon nuts and acorns, but some may represent hunting camps. All are located in sheltered sandy places rather than on the rocky and exposed ridge tops. The absence of similar sites in some of the areas surveyed cannot be easily explained as suitable spots are present, and occasional isolated artifacts were found. However, the easiest (least rocky) route to the top of La Jara Mesa is through the central part of Section 31 and thence through the breaks in the escarpment further SW, and the discontinuous distribution of sites in Zone 2 may be simply due to ease of access.

TABLE 2
Site Characteristics

Site No.	Type of Site	No. of Features	Artifact Density	Stage
H:10: 1	masonry	2	1	late PII
2	masonry	3	2	late PII
3	masonry	2	1	late PII
4	masonry	2	1	late PII
5	masonry?	1	1	PII ?
6	masonry	2?	1	PII ?
7	masonry	2	2	late PII
8	masonry	2	2	late PII
9	masonry	2-3	2	late PII
10	masonry	1	1	late PII
11	scatter	?	2	late PII
12	masonry	1-2	1	late PII
13	hogan	4	3	Navajo
14	circle	1	1	Archaic ?
15	circle	1	1	?
16	masonry	2	1	PII
17	masonry	1	1	late PII
18	scatter	?	1	early PII ?
19	masonry	1	2	late PII
20	masonry	1-2	1	PII
21	masonry	1	3	late PII
22	masonry	1-2	2	late PII
23	scatter	?	1	PII
24	hearths	2	1	? + PII
25	hearth	1	1	?
26	masonry?	2?	1	PII
27	masonry	1-2	2	PII
28	scatter	?	1	early PII?
29	masonry	10-12	5	PII-III
30	masonry	1	1	late PII
31	scatter	?	1	late PII
32	scatter	?	2	late PII
33	masonry	10-15?	4	PII-PIII
34	scatter	?	2	late PII
35	circles	6	1	?
36	hearth	1	1	?
37	hogan	4	3	Navajo
38	hogan	1	1	Navajo
39	scatter	?	4	late PII
40	jacal?	5?	3	late PII
41	scatter	?	2	Archaic?
42	scatter	?	2	late PII
43	scatter	?	2	late PII
44	scatter	2?	2	Archaic? + PII
45	scatter	?	2	PII

TABLE 2 Continued

Site No.	Type of Site	No. of Features	Density	Stage
H:10:46	masonry	1-10?	3	late PII
47	hearths	4	2	Archaic?
48	circles	3	1	Navajo
49	hearth	1	1	?
50	hearth	1	1	?
51	circle	1	2	PII?
52	hearths	2	1	PII?
53	hearths	2	1	PII
54	hearth	1	1	?
55	hearths	9	1	? + PII
56	scatter	?	2	PII
57	hearth	1	1	?
58	hearth	1	1	?
59	scatter	?	2	PII
60	scatter	1+?	2	BMIII, late PIII
61	scatter	?	2	early PII?
62	scatter	?	3	PII
63	scatter	?	2	PII
64	scatter	?	2	PII
65	?	2	1	?
66	masonry	5-10	4	late PII
67	scatter	?	3	late PII
68	hearths	2	1	?
69	hearth	1	1	PII
70	hearths	7	1	? + PII
71	hearths	2	1	?
72	hearths	1?	1	PII
73	masonry, etc.	6	3	? + PII
74	masonry	4-6	3	late PII
75	scatter	?	2	PII
76	masonry	2-3	3	late PII
77	scatter	?	2	PII
78	masonry	15	5	PII-PIII
79	masonry	2-5	4	late PII
80	masonry	4	2	late PII
81	cists	2-4	1	BMII ?

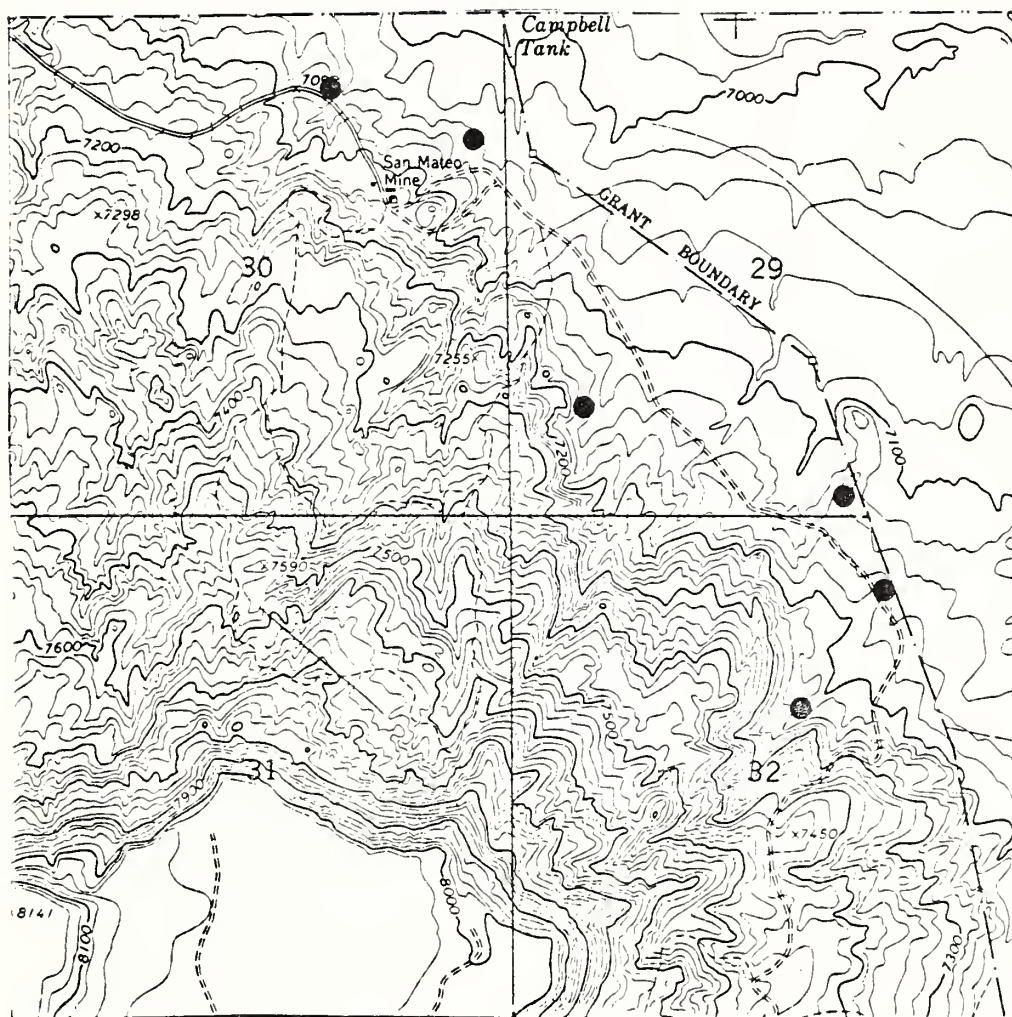


Figure 12. Distribution of 5 to 15 room Pueblo II-III sites.

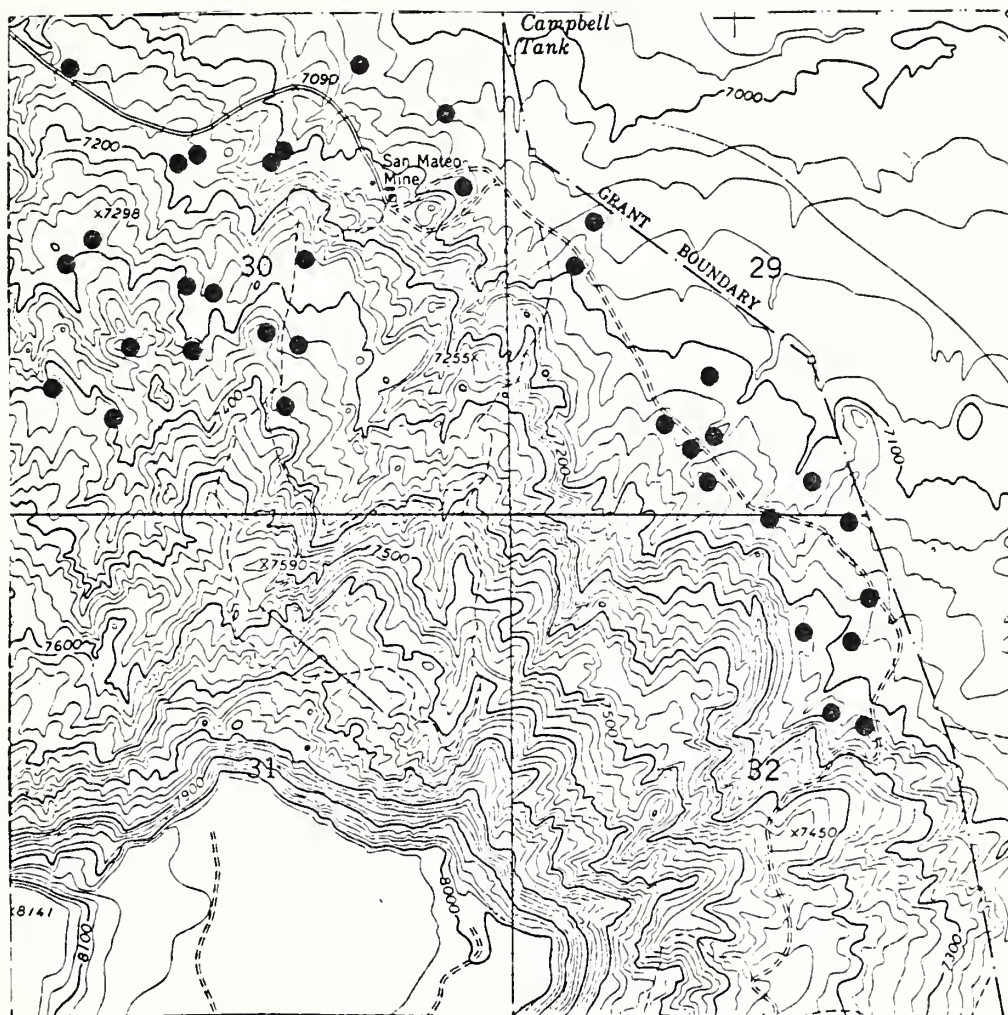


Figure 13. Distribution of small Pueblo II habitation sites.

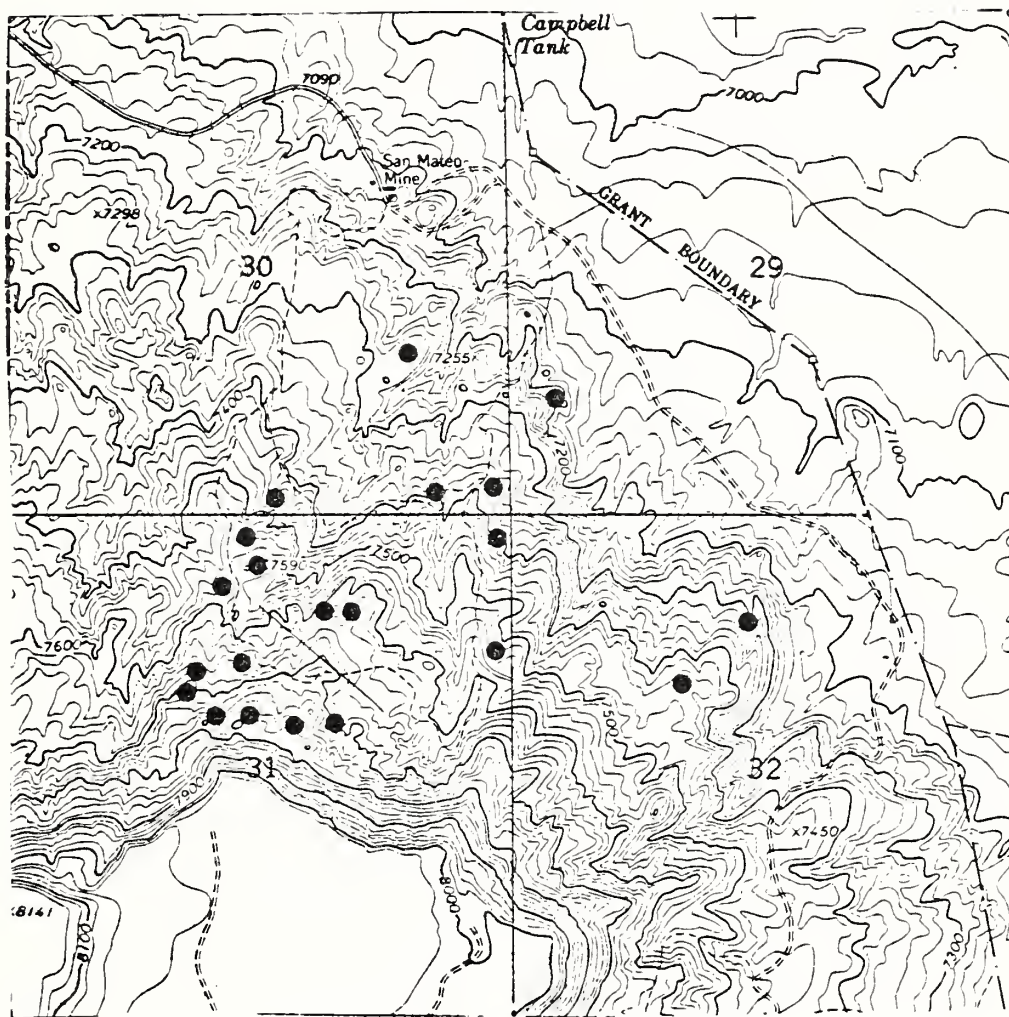


Figure 14. Distribution of hearth sites and small sherd scatters.

The paucity of artifactual material at these campsites makes a temporal and cultural assignment difficult, but at least some are contemporaneous with the pueblo sites in the lowlands. Sherd material is most consistently associated with hearths that are nearly circular and lined with small sloping basalt slabs. Interestingly, dippers were found associated with two of these hearths. Other hearths are more oval, and ringed with chunks of vesicular basalt. Pottery is only rarely associated with these, so it is difficult to say at this moment whether the differences in hearths is functional, temporal, or both. Careful excavation of a number of these hearth areas, including flotation of hearth contents, will be necessary before any definitive statements can be made.

No sites were found in the small area of Zone 1 included within this survey, although occasional isolated artifacts were noted.

Many of the sites within or near Zones 3 and 4 are located on hilltops, some notable because of the exceptionally wide view, such as H:10:4 and H:10:21. But the sites that have the furthest view are difficult to get to and uncomfortable to walk around on because of the numerous rocks, and are much more exposed to the wind and lightening. If the wind is blowing, however, the flies would be less of a nuisance, and these places appear to have fewer ants. The view seems to be the principal attraction, however. H:10:21 particularly has a good view, and also is reasonably close to potential farmland. I have the impression, however, that this site was not an ordinary habitation, but perhaps had some ceremonial connotations.

It is tempting to postulate that population pressures and competition for farmland in Zone 4 was forcing some people to utilize the more marginal areas of Zone 3 and even parts of Zone 2, but this is probably stating it too strongly. Perhaps there were some people then, as now, who simply preferred to live away from the crowd, even if it meant that subsistence was a little more difficult.

The prehistory of the San Mateo Mine area is only a microcosm of the prehistoric events of the surrounding area and the Southwest as a whole. The earliest evidence of occupation here was during the Archaic stage, perhaps 5000 B.C., although Sandia remains have been mentioned from the San Mateo valley (Harrison 1968). The Archaic utilization of the area appears to have been sparse and sporadic, as were the early phases of the Anasazi occupation. It was not until Pueblo II that large numbers of people were consistently living here. The earlier sites appear to have been small, but some in more favored locations continued to grow, and the population apparently concentrated in the larger sites and reached a peak by the 1100's. With the onset of cooler and drier climatic conditions and population shifts elsewhere, the area appears to have been largely abandoned for several centuries. Anglos and Chicanos have occupied the valley for the last 200 years, and Navajos utilized the immediate area about the turn of the century. The most intensive use of these several sections has, of course, been related to the uranium mining in the mid 20th century.

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PAPER NUMBER FOURTEEN

AN ARCHEOLOGICAL SURVEY IN MIRANDA CANYON
CARSON NATIONAL FOREST, NEW MEXICO

By
Kathleen Quinn

Introductory Statement

This and the following report were filed with the U.S. Forest Service in fulfillment of requirements stipulated in a permit issued to Catholic University of America. The work was done in the Carson National Forest and a Masters thesis based on the data is in the process of completion.

I personally owe a debt of gratitude to the following people: Jeff Boyer for his help on survey, Jack Boyer director of the Kit Carson Museum and R. Gwinn Vivian of the Arizona State Museum for intellectual stimulation and encouragement and practical advise. I wish also to express my appreciation to the Fort Burgwin Research Center in Ranchos de Taos, New Mexico, for their assistance and in particular Dr. R. K. Wetherington for the use of the equipment for excavation, Murray Oxman for assistance in excavation of the burial and Dr. Donald Austin for professional comments on the skeletal material.

Introduction

The survey was carried out during the summer of 1975 in Miranda Canyon, or the Arroyo Miranda Valley (Map 1), a minor tributary of the Sangre de Cristo Mountains in the vicinity of Rancho de Taos, New Mexico. The survey zone was about 7 miles south of Taos and was divided between the Carson National Forest on the east and the Cristoval de La Serna Grant on the west. The Grant land is privately owned by several families. The total survey area is approximately 13 square kilometers, including about 4.05 square kilometers of National Forest land.

Research Objectives

The purpose of the research was to correlate all observed cultural material with environmental features within a defined universe, in an attempt to determine the nature of the articulation of the two. Two expectations were formulated from a limited knowledge of the physical environment and of the patterns of human occupation observed by such people as Jeancon (1927), Wetherington (1968), Luebbon (1968), Herold (1968, Blumenchien (1955) and Hume (personal communication). The first expectation was that two types of sites would be found within the Arroyo Miranda drainage. The first type was postulated as a multi-activity site. This type should be characterized by a complement of artifacts indicating a variety of human activities. It was further expected that these sites would be found toward the northern or upper end of the drainage in the relatively broad, flat, open terraces above the arroyo and the Rio Grande de Rancho. Such habitation structures as pit houses and pueblos, constructed as semipermanent or permanent dwellings adjacent to good farm land, were expected. They would occur between the mountains and the valley of Taos, both of which provide a variety of natural resources. In this way the habitation areas could be used as bases from which to exploit a wide range of natural resources to the south and north.

The second site type was defined as a limited activity site. Limited activity sites were defined as sites indicating use for only a few activities, such as hunting and butchering, quarrying and selected use of particular zones for procurement of natural resources. The artifacts found at these sites would be limited, indicating limited objectives. It was expected that limited activity sites would be located in the more rugged terrain of the Miranda drainage to the south.

The second expectation (based on knowledge of the environment and on historic accounts) was that cultural material found either as isolated artifacts or as sites would indicate movement and, possibly, trade from north to south along the Arroyo Miranda drainage, connecting the Taos Valley to the north and the river valleys to the south with Santa Fe.

The Physical Environment

The Arroyo Miranda provided the central focus for the survey. The north-south line of the survey includes the origins of the drainage at about an 8400 foot elevation and extends about 6 miles to the north, where Arroyo Miranda drains into the Rio Grande de Ranchos. The eastern survey boundary is a linear ridge beginning north of Vallecitos and running parallel to the arroyo for about 4 miles. The western boundary is marked by a series of somewhat parallel ridges perpendicular to the arroyo.

The survey was divided into six environmental areas, reflecting a variety of topographic features and vegetation (primarily arboreal) associations. Area 1 is a high altitude region, with several mountain meadows surrounded by steep-sloped ridges and mountains. There are two springs in this area, providing abundant water. The vegetation is primarily ponderosa pine, with spruce, fir, aspen, oak and juniper occurring. At the lowest elevations the ponderosa is more frequently associated with juniper, pinon and oak. Area 2 is the long ridge parallel to the arroyo on the east. It drops in elevation from 8440 feet in the south to 7800 feet in the north, covering a distance of 4 miles. The slopes of the ridge are steep and the top is generally narrow, with a few broader areas. In the south the vegetation is dominated by ponderosa pine; associated with it are fir, oak, spruce, aspen and juniper. Further north along the ridge the vegetation is characterized by ponderosa, mixed with juniper, some pinon and oak; aspen is found mostly on the slopes. There are few fir trees. Yucca and prickly pear cactus are found toward the middle of the ridge, increasing in size and density to the north. At the northern end the ridge is dominated by juniper, with pinon and some ponderosa present.

On the west side of the arroyo is Area 3, consisting of the parallel ridges. These ridges terminate in the west at the base of a mountain range which radiates to the north from Picuris Peak. The vegetation associations include ponderosa, with aspen, fir, oak and spruce to the south. Ponderosa, juniper, pinon and oak occur toward the middle. At the northern edge the vegetation is dominated by juniper, with some pinon and an occasional ponderosa pine. Yucca and prickly pear increase to the north of the survey area. The terrain is broken up by a series of deep washes, which cut between the ridges and drain to the east into the Arroyo Miranda.

The Arroyo Miranda comprises the fourth area. It supports a lush vegetation of large ponderosa, juniper and pinon. Grasses are quite thick in open sections along the arroyo, which is fed by at least three springs. One is in the south, the second is about midway along the arroyo to the north and the third is the Ponce de Leon spring just above the confluence of the Miranda and the Rio Grande de Ranchos. The arroyo cuts deeper at its northern end, where it is

bordered by cottonwood and willow, with some juniper present. Ponderosa disappears completely to the north. Rabbitbrush is found on the broader surfaces along the arroyo about 2½ miles north of its source. Sagebrush was first recorded about 3 miles north of the source. The terrain varies from narrow flood plain areas to none.

Area 5 is at the point where the mountains end to the north. The terrain is less rugged and is characterized by rolling hills. The vegetation is dominated by juniper, with pinon atop the few hills. Sagebrush is more common than it is further south. Area 6 is adjacent to the point at which the arroyo drains into the Rio Grande de Ranchos. It is broad, flat, open terrain, gradually sloping to the Rio Grande. The surface is dominated by sagebrush, with small juniper along the drainage channels. The survey area was further divided into 18 subdivisions reflecting more subtle differences in topography and vegetation.

Field Method and Work Accomplished

In order to determine the validity of the expectations, field methodology were designed to elicit specific information. Cultural material found on the surface was identified either as isolated artifacts or as sites. The density of artifacts was presumed to indicate a corresponding intensity of human activity. Both situations were considered to provide information pertinent to understanding the articulation between the inhabitants and the environment.

Cultural material was not taken from the field, but was studied in situ. Information on the artifacts and sites, recorded in field notes included the following: environmental description, typological description of artifacts (either isolated or within sites), and site description and location, which was plotted on a 7½" USGS map (the Ranchos de Taos quad of the New Mexico series). Photographs were also taken. Photographic information includes the variety of land forms and vegetation in the survey area, relative location of the survey area, topographic location of sites and isolated artifacts, vegetation in the vicinity of sites or isolated artifacts and pictures of artifacts. The photographs provide visual documentation of the written descriptions.

Interpretation of Information Collected

Final conclusions concerning the implications of the cultural material found have not been formulated. A summary of the cultural material is provided here, with emphasis on the sites and isolated artifacts found within the boundaries of the Carson National Forest.

Cultural material located within national forest boundaries was found in Areas 1, 2, 3 and 4.

Three sites were found in Area 2. One not here described is on private land. All three sites are similar in complement of artifacts, and all suggest hunting activities, with minimal additional use. Area 1, the mountainous area in the south, may have been used primarily for hunting. The two springs in the zone are a permanent water source and would be attractive not only to people, but also to game. The campsites also may represent temporary stopping for people coming from lower elevations to the north.

One projectile point fragment, a basalt biface and several small obsidian and basalt flakes, suggesting refurbishing of tools, were observed at Site 1. Site 2 had two projectile point fragments, a basalt biface, a chert scraper, flakes of chert, basalt and obsidian and one small plainware sherd. The lithic debris at Site 2 is small, perhaps indicating an area for the completion of tools or for refurbishing of tools already utilized. Isolated artifacts found in Area 1 included a projectile point, which was broken and retouched on the tip; a utilized chert flake; quartzite flake, and two chert flakes with multiple flakes removed from the dorsal surface.

Area 2, the ridge paralleling the arroyo on the east side, has isolated artifacts scattered along its entire length. One small site (Site 13) was found at a broad point on the western side of the ridge. The isolated artifacts included two basalt projectile point tips, one basalt projectile point base, one basalt projectile point with the tip broken and reworked, two obsidian projectile points broken in half and one basalt artifact that appears to be a multi-purpose tool was recorded. It is longer than it is wide and is roughly oval in cross section. The sides have pressure flake scars. One end is wider than the other and appears to have been utilized. The narrower end has small pressure flake scars on both the dorsal and ventral surfaces. The artifact is bifacially flaked. Other isolated artifacts included a jasper biface, five obsidian biface fragments and numerous flakes of porphery (3), basalt (26), chert (6), and jasper (22). Although there are porphery quarries across the arroyo, the larger amounts of debitage are basalt, which most likely came from the Taos Valley to the north. The flakes are generally small, suggesting refurbishing of tools or the final stages of tool production.

Site 13 was found along the west side of Area 2. The artifacts are mostly lithic debitage, consisting of small, thin flakes of basalt, obsidian and jasper. A stemmed basalt projectile point and a side-notched point were also found. Several of the flakes had multiple flake scars on the dorsal surface, suggesting removal from a core, biface or possibly, a projectile point. The site would seem to be made from materials found outside the boundaries of the survey unit.

At the northern end of the ridge a possible pit house was located. It is a very shallow depression just above a wash at the bottom of the ridge. The surface is relatively flatter than the surrounding terrain. The depression measures approximately 18 feet in diameter. Several basalt flakes and an obsidian biface fragment were found scattered to the west of the depression and an obsidian projectile point base was found on the north edge of the depression.

The top of the ridge appears to have been utilized prehistorically for hunting. The one positively identified site on the ridge (Site 13) would seem to be a camp where tools were finished or retouched for further use. The one possible pit house is at a lower elevation and in an area where the general terrain is less rugged than in the higher elevations. The pit house is adjacent to a drainage and not far from the Arroyo Miranda.

Area 3 consists of the series of parallel ridges perpendicular to the Arroyo Miranda. Most of this area is on private land although the ends of several of the ridges are on Forest Service property. A pit house was located at the eastern end of one of these ridges. The pit house (Site 587) is just above a spring and is bordered by a deep wash to the south and an old road cut on the north and east. A burial is exposed in the cut bank of the road and the edge of the pit house is adjacent to the cut bank. Two other pit houses are located up the ridge (to the west) on private land. Cultural material has washed down slope from these two pit houses, making distinctions between cultural material on the surface difficult. Pottery types at the easternmost pit house include Taos and possibly Santa Fe Black-on-white and tan to brown corrugated, incised and punctuated culinary wares. Several manos and at least one trough metate were noted at the site. A concentration of basalt artifacts, identified as cores and associated debitage, was found east of the site. Just to the north and east of Site 587 a group of obsidian flakes was found, associated with an obsidian projectile point. Pottery types date the pit house at about A.D. 1150 to A.D. 1350 (Wetherington, 1968). The artifacts associated with the pit house suggest a wide variety of activities, such as hunting, gathering, and possibly some agriculture and tool manufacturing.

Other sites found within Area 3 on private land are multi-component site (5) at a porphery quarry, which includes a pit house, hearth, and extensive quarrying zone and pottery types representing a continuum from about A.D. 1100 to almost A.D. 1700; a pit house (Site 6) adjacent to a quarry site with Taos Black-on-white present, and further south, a quarry site with plainwares and Taos Black-on-white restricted to one section of the site. Several additional small sites, (8 and 11) suggesting hunting camps were located to the north. Another quarry site (Site 9) with an obsidian projectile point was found to the north of the hunting camps. West of 587, on the last ridge to the north, is another pit house associated with quarrying activities (Site 12) but only six plainware sherds were found about 40 feet from the pit house. The total complement of sites indicated a variety of uses in Area 3. There are permanent

to semi-permanent sites dating from A.D. 1100 to 1350 and probably later. The evidence at the pit houses indicate a variety of activities and, therefore, presumably different exploitations of the environment. The narrow flood plain above the arroyo could have been cultivated and the surrounding terrain to the south, east, north and west could have been used for hunting and gathering wild foods. The hunting campsites probably represent temporary campsites. Isolated projectile points were also found in the more rugged terrain to the west of the arroyo and the pit houses. In all cases the pit houses are built within a half mile of the arroyo. The pit houses could have been used as base camps for exploiting the many natural resources in the area. Small camps were probably used as brief stopping points while hunting

A variety of isolated artifacts were found in Area 4. Some are associated with areas that have been eroded and are probably displaced from sites. Others could represent specific activities: collection of wild plants, tool retouch, hunting or movement of people from one area to another. Three isolated pot sherds found along the arroyo in Area 4 are not common to the Taos area. They are: a white, red and black polychrome; a red on buff, and a black on cream colored slip. Very few of each were found. These pottery types suggest contact with people living outside the Taos Valley, probably south along the Rio Grande.

To the north of Area 4 in Areas 5 and 6 the sites indicate a somewhat denser population than that along the arroyo. Several sites (Sites 15, 16, 18 and 20) have two or more pit houses adjacent to each other. A pueblo was recorded and excavated by Jeancon in the 1920s and another small pueblo, with a possible kiva, was recorded by the author (Site 22). The two pueblos may, in fact, be the same structure, as it was not possible in this survey to locate Jeancon's site.

In summary, the cultural material suggests some modification of the expectations originally stated. The multi-activity sites were found where expected, but pit house sites were found further south than originally expected. Sites to the north do represent larger population aggregates, however, than the pit house sites along the arroyo to the south. Population size, therefore, should have been considered an important variable. Seemingly, larger populations inhabited the broader open areas to the north, while the single dwelling units are found to the south. The hunting camps, which represent limited activity sites, were generally found where expected--in rugged terrain at higher elevations. None of them are far removed from water. Several quarry sites were also found, at which no other activities were represented. The material being quarried was predominantly porphyry. These sites represent limited activities, associated with available natural resources.

The second expectation, concerning movement and trade, cannot be dealt with extensively due to the lack of knowledge of cultural materials and time periods in the Taos Valley. Limited evidence, however, suggests contact between people in the area of Taos and further south to Santa Fe and movement of people in the north along the Arroyo Miranda to acquire raw materials for making tools. There is almost a trail of porphery debitage from the quarry sites north toward the Taos Valley. The amount of porphery found south into the mountains is negligible.

A preliminary statement concerning the original research objectives (the study of humans and their relationship to the physical environment) can be made. The survey area was occupied from at least about A.D. 1100 to the recent past and probably earlier. The earliest pit houses are found along the Arroyo Miranda as single dwelling units. Later period sites are found on the broad open terraces to the north and usually consist of two or more associated pit houses. There is at least one small pueblo to the north, as well. The larger population aggregates seem to be confined not only spatially, but also in time. The Arroyo Miranda was used over time by various people for somewhat similar activities, but their base camps or habitation areas are found in different zones. Quarrying and hunting seem to have been the primary activities for which the Arroyo Miranda drainage was used. Trade also may have been important. Of particular interest is the fact that virtually every environmental area or land surface was exploited for some purpose. When a more detailed understanding of the cultural material of the area is developed, it may be possible to distinguish different uses at different times.

Another consideration is the variety of subsistence patterns defined for different time periods. The situations described above suggest a pre-occupation during this research with occupations dating after A.D. 900. This was not intended, but in the original research design, available cultural data had to be used and in the Taos Valley, these data are generally limited in time to the later periods. Studying early occupations in other portions of the Southwest, where they are better understood, helped provide a general framework for fitting pre-A.D. 900 peoples into the expectations concerned with limited and multi-activity sites. Jennings describes early hunters and gatherers in the Great Basin as moving seasonally from area to area in order to survive in the most efficient manner. Heizer, in his description of Lovelock Cave in Nevada, suggests a return through time to the area to exploit the environment at a particular season. Most archeological information on occupations defined as Archaic and earlier than A.D. 900 indicates that people practiced a tethered nomadism. Base camps have been described as early as 8000 B.C. by Judge (1973), with limited activity sites in the vicinity. He describes base camps as main habitation areas with a variety of different artifacts represented, while the limited activity camps are suggestive of either hunting or butchering activities and are temporary camps from which people returned to base camps.

It would be feasible, then, to expect to find multi-activity sites and limited activity sites associated with people occupying the area before A.D. 900. The actual location of the two site types would, however, be somewhat different. For example, it would not be unusual to find an early base camp further south along the Arroyo Miranda drainage, as opposed to the open terraces to the north. Early peoples are generally believed to have lived in small groups or bands, possibly centered around an extended family. Such a group could just as easily live in habitations along the narrow ridges and flood plain to the west of the arroyo toward the south. The later groups tended to live in small pit house villages or pueblos. Associated with the early multi-activity sites one would expect to find sites that indicate specific activities within different environments and on different land surfaces. Several projectile points found may, in fact, represent pre-A.D. 900 occupation and use of the area.

E. B. Renaud (1942, 1946) described numerous surface sites in the 1930's, which he designated as upper Rio Grande Culture. Stone alignments were often noted with these sites and while there was an abundance of lithic debitage associated with them, there was no pottery.

Subsistence and settlement patterns can generally be described as differing in time. First, the earlier occupations, dating about A.D. 900 to A.D. 1100 or A.D. 1200 (Wetherington 1968), reflect small numbers of people living together in single dwelling units. These dwelling units represent semipermanent to permanent occupation of the area. The immediate environment was exploited according to the available natural resources. Farming could be practiced above the arroyo. Lithic material could be procured and prepared to make tools and the final stages of tool production could be carried out. Hunters could go out on expeditions to the mountains in search of game without an extended absence. In the mountains and other areas surrounding the pit houses, a variety of wild plants are found such as prickly pear, yucca and various berries.

The next occupation dates from about A.D. 1200 to A.D. 1400. The permanent habitation areas of these people are found in the broader, open zones to the north, where Arroyo Miranda flows into the Rio Grande de Ranchos. These habitation areas reflect larger numbers of people living together in communities. Perhaps the most important natural resource for people in this area was and is the rich flood plain of the Rio Grande de Ranchos. Persons living in this area could still exploit the higher elevations to the south for game and wild plants, as well as for lithic materials. Evidence at the larger sites also indicates movement north to acquire basalt for tools or for exchange with people to the north and south. The area historically has been used predominantly as a source of timber. The arroyo supports unusually large ponderosa, as well as juniper. An old lumber camp (Site 7) along the arroyo is just below Sites 5 and 6. It is quite possible that the Arroyo Miranda area was used prehistorically for collecting large trees for pit house and pueblo construction.

Many ideas for further study in the area were generated from the survey described here. If further work is done in the area, it should include limited collection and excavation. With the knowledge from the survey, a stratified sample to test ideas could be developed, thus, disturbing as little data as possible.

Several suggestions for further study are briefly described. All of the research objectives of this project could and should be extended, so that a more accurate understanding of the area can be achieved. The survey area also could be extended to the north and south to attempt to locate different kinds of sites and to detect the extension of use in the area. In order to better understand movement in the Arroyo Miranda, a survey across the Picuris Pass and to the south, at least as far as Picuris Pueblo, should be done. The surrounding terrain to the east and west should also be considered. Perhaps one of the most important problems to be approached is that of distinguishing time periods from the available cultural data. Without a good chronology it is impossible to do valid studies of culture change and this is perhaps one of the most valuable things that archeology has to offer. Understanding cultural processes and explaining them is, to some extent, dependent on understanding culture change and vice versa.

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PAPER NUMBER FIFTEEN

EXCAVATION OF A BURIAL AT SITE 587
CARSON NATIONAL FOREST, NEW MEXICO

By
Kathleen Quinn

Introduction

Work began on July 15, 1976, and continued through the first week of August. I planned and directed the excavation and Murray Oxman, a student from Southern Methodist University, helped in the field and with the skeletal analysis.

The Site

The site consists of a pit house depression and two trash areas. The burial was found in the trash area to the east of the pit house depression. The other trash area is to the north and east of the pit house. The trash areas were identified on the basis of concentrations of artifacts.

The site is located in a vegetation zone dominated by juniper. There is also ponderosa pine, sagebrush (dominant on the site), several small spruce trees and prickly pear cactus present in the entire area. The area has been disturbed by past and present timbering. Topographically the site is situated on a ridge that descends from a part of the Picuris Range to the west towards the Arroyo Miranda in the east. Approximately 400 feet to the east of the site there is a spring which feeds the Arroyo Miranda. A deep arroyo channel that borders the site on the south and drains into the Arroyo Miranda appears to carry water seasonally. The eastern side of the site has been disturbed by a road cut which removed a part of the site and caused the burial to be exposed.

Field Work

Before the burial was removed, the site was recorded in detail. The boundaries were determined by the horizontal distribution of artifacts and the road cut on the eastern side. The site was divided into units measuring 5 meters. The units were staked and each unit was mapped. The southwest corner of each unit was used as the unit designation. The burial was found in unit N5E10. The surface of the 5m by 5m unit with the burial was mapped using triangulation and each artifact was located on the map. Artifacts were numbered consecutively and collected in individual bags. Within the unit a smaller grid was laid over the burial. This unit, N6E10, was 2m by 2m. The bank cut diagonally across N6E13 from the southwest corner to the northeast corner. The tibia, fibula and femur of the right leg and the ulna and radius of the right arm were exposed along the bank. N8E13 was used as a datum point for the excavation. Datum was marked at 30 cm above the ground surface before excavation. The elevation of the site above sea level is between 7,680 feet and 7,676 feet. The datum served as an arbitrary, fixed point for measuring, mapping and excavation control.

The excavation unit was located at the eastern edge of the trash area that measured about 4 meters north to south and 5 meters east to west. Feature 1 represents a subsurface pit which extended west into the wall of the excavation unit. The burial pit was found underneath Feature 1 and overlapped it but extended to the east. Most of the artifacts recovered were found in Feature 1. The artifacts found in Feature 2 were few in number but similar to those found on the surface and in levels 1, 2, and 3.

The excavation unit was removed in five levels. Surface was a zone that was scraped to a depth of 40 cm below datum or 10 cm below the surface. Level 1 was extended to 50 cm below datum. This unit was leveled so that each corner was at the same depth. Within Level 1 the eastern edge of a pit was discovered. This pit was labeled Feature 1. Level 2 was excavated to a depth of 60 cm below datum and Feature 1 continued into this level. Feature 1 found along the west wall of the excavation unit measured 1 meter north to south and 80 cm from west to east. Level 3 was excavated to 70 cm below datum, and another pit was found within this level and labeled Feature 2. Feature 2 was the burial pit. The burial was outlined and excavated separately from the rest of Level 3. The top of the skull was found at 60 cm below datum and the pelvis at 73 cm below datum. Feature 2 was designated L3B. Feature 2 was excavated to a depth of 83 cm below datum where sterile clay was found. Several soil and pollen samples were taken during excavation.

The Burial

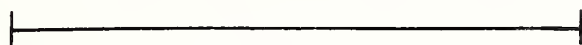
The burial pit was found within Level 3 approximately 20 cm from the west wall. The top of the skull was found at a depth of 60 cm below datum and the base of the skull at 73 cm below datum. The burial was excavated to a depth of 83 cm below datum. The body was found lying on its back with the skull upright and the legs bent at the knee (Figure 1). Only one artifact, a sharpened bone implement (probably a bone awl), was found with the burial just above the rib cage and thoracic vertebra. At the base of the skull a small rock was found that may have been placed to support the skull in an upright position.

The burial was lying on sterile redish brown clay mixed with gravel. The bone above the pit bottom was well preserved. The bone lying directly on the gravel, clay pit bottom, however, was decomposing and extremely fragile. Most of this bone was damaged so badly that it could not be removed intact. The deterioration of the bone was probably the result of the fact that the soil under the burial was composed of clay and gravel. Water that percolated down through the trash and loose soil would have left the upper portion of the bone fairly dry, but the clay beneath probably held the water long enough to soak the bone. The gravel in the clay provided a way for the water to eventually drain off. The constant wetting and drying of the bone probably caused the decay.

SITE 587

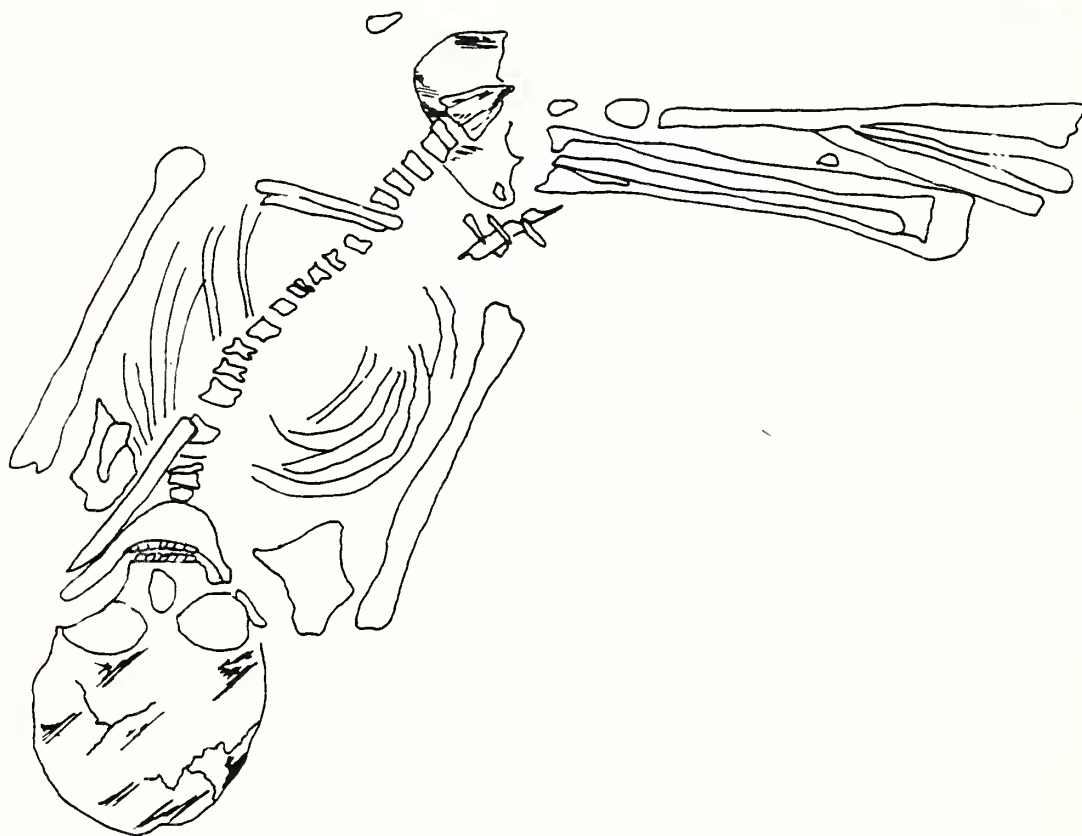
THE BURIAL

FEATURE 2



1 meter

● N8E13



● N6E13

Figure 1

Lab Work

Lab analysis was divided between skeletal and artifact analysis. The artifacts were washed and labeled with the site number and provenience designation. The skeletal material was cleaned and inventoried. Mr. Oxman was responsible for the detailed analysis of the skeleton under the direction of Dr. Donald Austin of Southern Methodist University. Dr. Austin prepared the following summary of their work:

This individual, a female, was probably between 25 and 35 years old at the time of death. Suture closure indicates under 40. Dental attrition is light, similar to individuals from TA-1 (Pot Creek Pueblo) who are estimated between 25 and 35 years at death.

Stature is estimated at $150.2 \text{ cm} \pm 3.8 \text{ cm}$. Marked occipital flattening (from cradle boarding) is readily apparent. Alveolar resorption is moderate. Premortem loss of at least four molars is the most serious pathology evident.

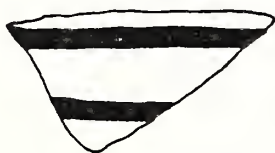
In general, the individual would fit into the burials from TA-1 (Pot Creek Pueblo) unnoticed. The lack of periostitis or other nondental signs of chronic disease are typical of this skeletal population. At TA-1 there is a higher frequency of females in this age range than one might expect. Death in childbirth could account for this but our sample is very small.

Interpretation

Ernestine Green and Dr. R. Wetherington have compiled some information on the chronological sequences of the prehistoric populations in the Taos area. Based on his excavations at Pot Creek Pueblo, Wetherington has described three phases: the Valdez Phase, the Pot Creek Phase, and the Talpa Phase. Green's (1976) most recent monograph focuses on the Valdez Phase. The site would appear to fall within this early period. The Valdez Phase dates between A.D. 1000 and A.D. 1200. The absence of Santa Fe Black-on-white at the site in any quantity suggests that the pit house falls within the first half of the Valdez Phase (Wetherington 1968). It is possible that the Santa Fe Black-on-white is Taos Black-on-white. Examples of black-on-white pottery from Site 587 are shown in Figure 2.

It has been concluded that the burial was contemporaneous with the pit house, and that the individual was buried adjacent to the pit house in an area used for dumping trash. A shallow pit was dug for the burial and several large rocks were placed over the pelvis of the body on the surface. The area was subsequently used for other refuse. Debris over the burial pit consisted of fire cracked rock and sherds.

Site 587
Black-on-white sherds
Surface collection N5E 10



No. 34 Interior design Mineral paint



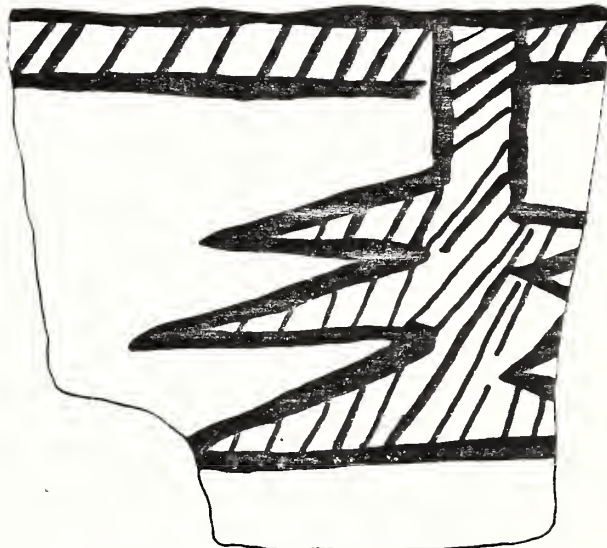
No. 90 Interior design, rim sherd
Mineral paint



No. 37 Interior design Mineral paint



No. 74 Interior design, rim sherd
Mineral paint



No. 53 Interior design Mineral paint

Other burials described from the Taos area that are associated with pit houses are found inside the structures. This suggests that the individuals were buried after occupation of the structure was discontinued and that the burials may not have represented the occupants of the pit house. The burial at 587 is somewhat unique for the area. The only similar situation reported is a burial 30 feet from a pit house reported by Peckham and Reed (1963). The lack of burials found outside of pit houses may be a result of inadequate reporting or the fact that when pit houses are excavated only the structure is cleared.

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PAPER NUMBER SIXTEEN

EXCAVATION AT AZ P:13:29 (ASU) A SMALL SITE
IN VOSBERG VALLEY, TONTO NATIONAL FOREST
ARIZONA

By
Donald E. Simonis

Figures

1. General location of Vosberg Valley.
2. Contour map of Vosberg Valley and location of sites referred to in the text.
3. Plan and profile of Houses 1 and 2 and the ramada.
4. Main architectural features of House 1.
5. Main architectural features of House 2 and ramada.
6. House 1 data sheet: ceramics, flora, and fauna.
7. House 1 data sheet: pollen, lithics and miscellaneous.
8. House 2 data sheet: ceramics, flora, and fauna.
9. House 2 data sheet: pollen, lithic, and miscellaneous.

Introduction

The Vosberg Valley, previously referred to as Walnut Creek (Morris, 1970), is located in Gila County approximately 16 kilometers (10 miles) southeast of Young, Arizona, (Figure 1). The area includes approximately 10.36 square kilometers (4 square miles) and varies in elevation above sea level from 1,524 meters (5,000 feet) to 1,860 meters (6,100 feet). The valley is characterized by steep slopes and cliffs along the western and southeastern borders, and gradual sloping on the eastern and northern sides.

Due to its location in the transition zone between desert and plateau, the valley provides a suitable environment for many varieties of Arizona's flora and fauna. Desert vegetation (e.g., acacia, yucca, agave, cholla, and prickly pear) grows in abundance beside that normally found in mountain areas (e.g., ponderosa pine, pinyon pine, walnut, oak, and juniper). Grasses cover many areas, with large meadows dominant along the creek. The variety of animal life includes deer, bear, coyote, fox, rabbit, squirrel, bobcat, frogs, turtles, and other species which readily inhabit the region. A substratum of soft, decomposing diabase forms the base of the Vosberg Valley. In some areas, as in the meadows adjacent to the creek, a meter of clay top soil is found; however, most ridges and slopes have only 10-20 centimeters of soil above the diabase.

The climate of Vosberg Valley is described as "one of cold, moist winters; dry warm springs; and hot, moist summers" (Chenhall, 1972:17), based on records at Young, Arizona, the closest weather reporting station with conditions approximating those in the Vosberg Valley. Records at the Young station record annual precipitation which averages 54.68 centimeters (21.53 inches) about 40 percent which falls as summer rain during July, August and September. Temperatures range from summer highs of 56° C. (100° F.) to winter lows near -18° C. (0° F.), (Sellers, 1964).

In addition to the natural animal and vegetable resources mentioned above, sources of chert, steatite and serpentine are found locally (Harris, 1974). One of the most important resources in the valley is the group of permanent springs located along the southern border near Walnut Creek. These springs feed into Walnut Creek making it a semi-permanent stream, which in turn feeds into Cherry Creek, a tributary of the Salt River.

Archaeological excavation and survey was first conducted by Arizona State University in Vosberg Valley during the summer of 1967. This and additional work done through 1975 resulted in the location of more than 80 prehistoric sites which covered a time span between A.D. 600 and 1400. Sites vary in size, with some of the larger sites having 10 to 30 stone-masonry rooms or pit houses, ceremonial structures, cemeteries, storage pits and stone ovens. Before 1969, none of the small sites, those containing five or fewer rooms or pit houses, had been excavated and their basic nature and relationship with the larger sites was uncertain.

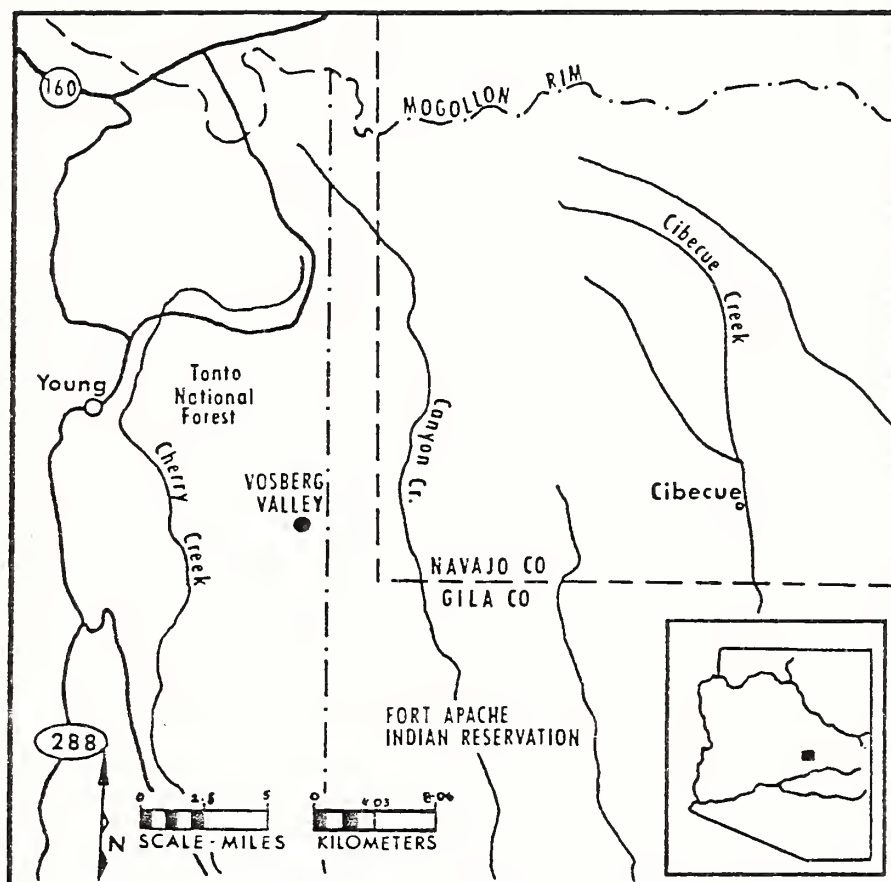


Figure 1. General location of Vosberg Valley.

Many small sites in the Petrified Forest region, northeast of Vosberg Valley, are thought to have been field houses which were seasonally occupied. (Wendorf, 1953:43.) Wendorf was influenced by Victor Mindeleff who studied and described living Pueblo peoples. Concerning field houses, Mindeleff stated, "lightly constructed shelters for use of those in charge of fields were probably a constant accompaniment of Pueblo horticulture" (Mindeleff, 1891:217). He further suggested that shelters provided protection against sun, rain, wind and other elements and were often used by children who guarded the agricultural fields.

An hypothesis was formulated based upon this conception of the field house. The hypothesis states, "small sites of the Vosberg locality, those with five or fewer structures, were field houses and they were used temporarily and seasonally in connection with agricultural pursuits." If this hypothesis is valid, certain test implications or expected conditions should be reflected by the data. Four test implications were identified: 1) the structures were not of permanent architectural construction, 2) only a limited range of activities is reflected by the artifactual and nonartifactual remains, 3) small volume storage facilities occur, 4) means of adapting to seasonally specific climate are indicated.

To test this hypothesis, a small site was selected and excavated. AZ P:13:29 (ASU) is located on a west facing ridge on the east side of the valley. (Figure 2, Site 29.) Two parallel rows of boulders approximately five meters apart and 10 meters in length covered the surface of the site. Five or six additional boulders in the central area between these rows suggested that the site consisted of at least two rooms. The survey collection of sherds from the surface indicated a time period of A.D. 1000-1200. Chert flakes were also present and there was no evidence of vandalism.

Research Techniques

Excavation was conducted over a 7-week period by six university students. After datum points had been established and the site photographed, fill above the house floors was removed by pick and shovel recovering soil, pollen, stratigraphic and other nonartifactual data in addition to the material culture. When the fill above the house floors was removed to a level of 5.0 centimeters above the floor, a 1-meter grid system was established and the areas of each grid worked independently with trowels, brushes and other small excavation tools. One student was assigned to each square and instructed to leave all artifacts in place. Samples of soil, pollen and charcoal were taken from each square and a map was made showing the specific location of each artifact. All floor (contact) deposit was placed in burlap bags and transported to Arizona State University for additional testing. Using flotation, water separation and washing techniques (Struever, 1968), carbonized seeds, vegetable fibers, small bones, lithic flakes and other small artifacts were recovered.

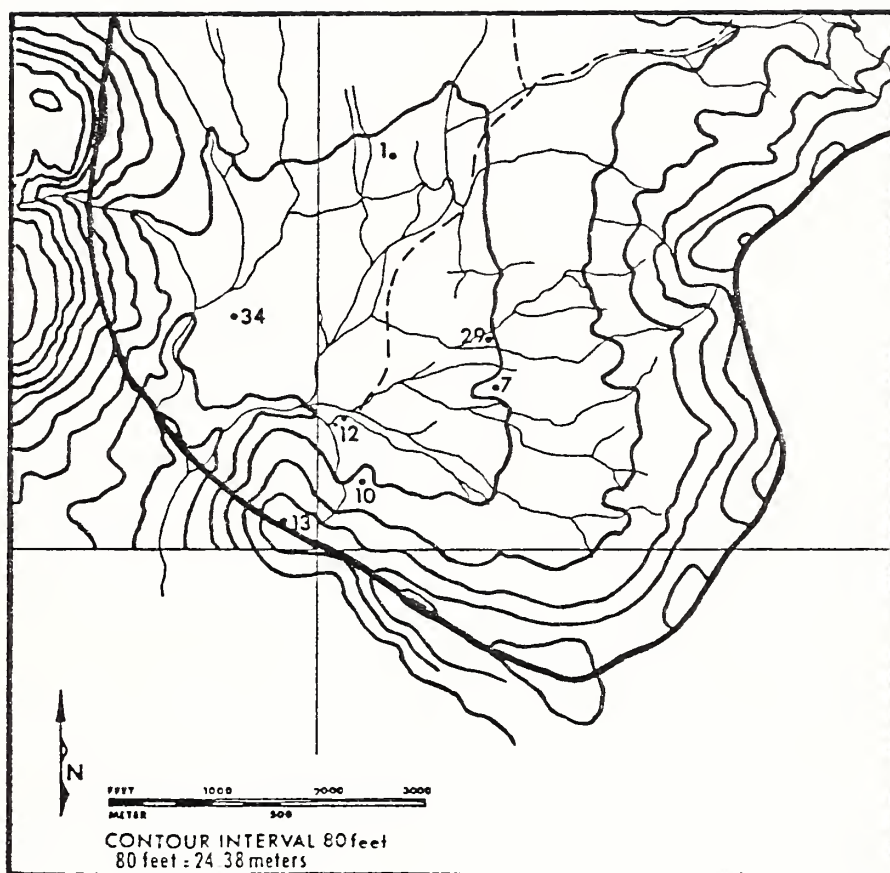
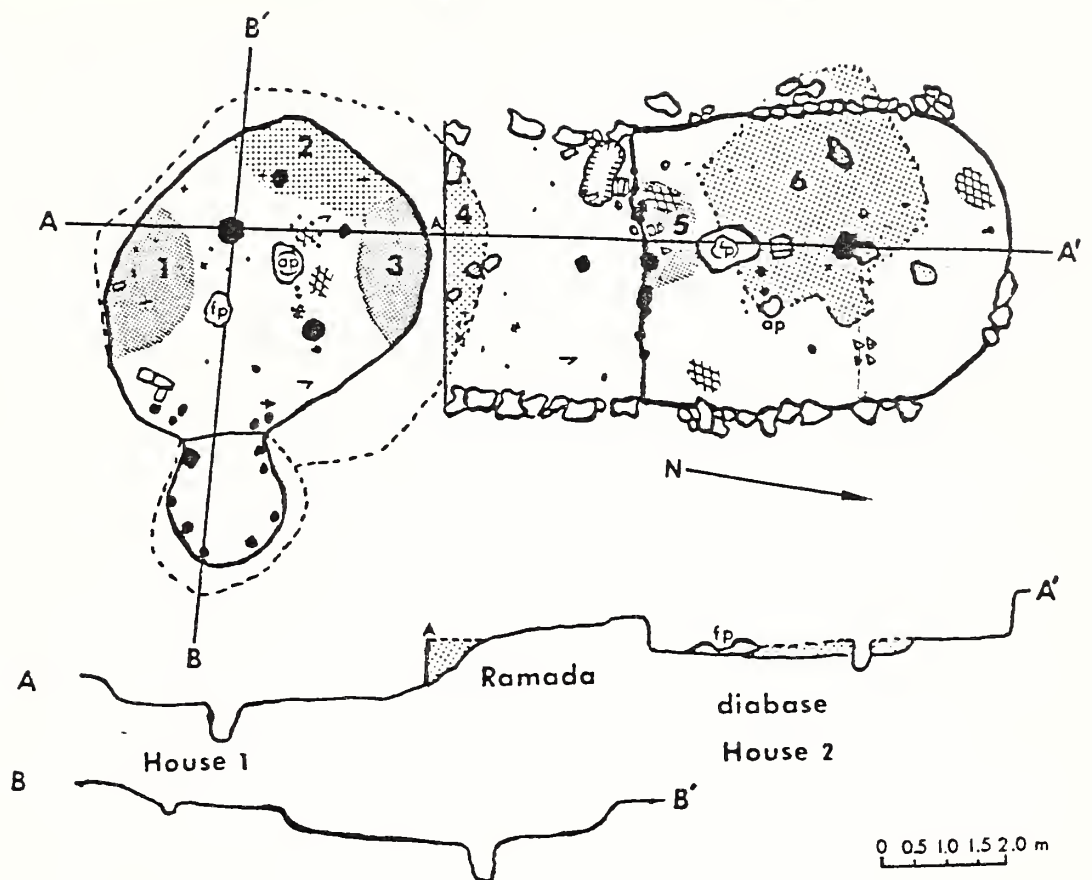


Figure 2. Contour map of Vosberg Valley and location of sites referred to in the text.



- | | |
|-----------------------------|-----------------------|
| + hammerstone | mano ☐ |
| ▷ projectile point fragment | metate ☐ |
| ♣ projectile point | 1-6 activity areas |
| ♣ bone awl fragment | boulder ☐ |
| ## sherd concentration | tabular stone knife Δ |
| fp fire pit | core • |
| ap ash pit | depression ☐ |
| ☼ burned bone | slab bin ☐ |

Figure 3. Plan and profile of Houses 1 and 2 and the ramada.

Major classes of data such as pollen, ceramics, lithics, flora, fauna, and charcoal were examined by specialists at various universities, museums and research centers. In the analysis of artifacts, especially those in the lithic category, examination for use and wear was made in order to determine probable function. The organization of all material was accomplished in terms of the floor grid from which they were recovered. Activity areas were defined by the distribution of tool kits, food remains and other artifactual and nonartifactual remains which it is believed resulted from the performance of specific maintenance tasks. Conclusions were derived by comparing the data and interpretations with the original hypothesis and test implications.

Architecture

Excavation revealed two houses and a ramada which were found to belong to two different components or time periods. House 1 was a roughly oval shaped pit house with an east facing, bulbous shaped, stepped entry. An above floor sandstone slab bin was located along the wall of the house just south of the entry (Fig. 3). The dimensions of the two main support post holes suggest that a substantial superstructure was used over the house. The smaller paired post holes just inside of the house on each side of the entry (Fig. 3, House 1) are similar to those found at Walnut Creek Village in Vosberg Valley. A basic six post hole pattern was found in the Anasazi pit houses at Walnut Creek Village with the post holes lining up parallel with the entry (Morris, 1950:52). House 1 might show an earlier version of this pattern which was popular in the 9th century A.D.

House 2 and a ramada made up the second component. House 2 was a composite house: a structure having two or more types of architecture. Although basically a pit house, some stone masonry and a jacal (wattle and daub) wall were used in this structure. There was no diabase in the west-central area of House 2 because an earlier pit house was found in this area. (Fig. 3, activity area 6.) The only possible entry discovered was along the south wall. The ramada was adjacent to the south wall and this area was not excavated into the diabase by the builders. The ramada apparently did have a roof (evidenced by post holes) but one or more sides could have been left open. This structure extended south over the earlier House 1. Because of the shallow depth, erosion, and root action, finer architectural analysis of the ramada was not attempted and a grid over this area was abandoned even though major artifacts were plotted. Both House 2 and the ramada were destroyed by fire. Burned roofing material was recovered from just above the floor revealing that the large cross beams of ponderosa pine and juniper used in the roof averaged 17 cm. in diameter. Smaller branches approximately 3 cm. in diameter were crossed over the large beams. Leaf imprints in the burned adobe showed that branches of mountain mahogany were added

HOUSE 1

Form: roughly oval

Dimensions: 4.0 x 5.5 m. (floor area) entry- 2.50 m.
house depth-0.65 m. average
entry depth-0.28 m.

Construction: a pit house excavated into the diabase.

Entry: a bulbous shaped, east-facing, step type with eight post holes around the inside edge.

Floor: a thin layer of compact soil over the diabase.

Post holes: HOUSE 1 had nine post holes, two main holes in the central area had diameters of 0.45 and 0.35 m and depths of 0.59 and 0.57 m.

Bins: one sandstone slab type above the floor just south of the entry, inside the house and along the wall.

Hearths: one approximately circular, clay-lined fire pit in poor condition of preservation, diameter-0.30 m. depth- 0.15 m.

one ash pit covered 0.50 m² area over and around a circular depression in the floor with a diameter of 0.29 m. and a depth of 0.10 m.

Figure 4. Main Architectural Features of House 1.

HOUSE 2 and RAMADA

Form: Rectangular pit house and shade area (ramada)

Dimensions: Length-approximately 9.0 m.

Width- 4.5 m.

Depth- HOUSE 2- 0.55 m.
ramada- 0.10 m.

Construction: HOUSE 2 was a pit house excavated into the diabase and lined on the sides with boulders. A waddle-and-daub wall was used for the south wall.

ramada- consisted of two upright posts and roof over area adjacent to and just south of HOUSE 2. It was not excavated into the diabase, but was also boulder lined.

Floors: Living on diabase or very thin layer of compact soil in some areas.

Roof: HOUSE 2- thick, heavy roof of mountain mahogany, juniper, ponderosa pine and adobe mud.

Ramada- not determined, two post holes might suggest a gabled roof.

Post holes: HOUSE 2- had ten post holes- one large one near the center of the house with a diameter 0.40 m. and a depth of 0.50 m. Nine smaller ones along south wall with diameters 0.10-0.30 m. and depths of 0.30-0.60 m.

Hearths: HOUSE 2- one circular clay-lined fire pit; diameter 0.30 m. and depth of 0.16 m. one amorphous ash pit.

ramada- none.

Entry: HOUSE 2- possibly through the south jacal wall
no other entry determined.

ramada- not determined, possibly one or more open sides.

Figure 5. Main Architectural Features of House 2 and Ramada

next and a final cap of adobe mud 10 cm. thick completed the roof. By measuring and weighing 40 of the larger adobe roof casts, it is estimated that the dry mud used in the roof of House 2 weighed 1,515 kg.

A comparison of these two stratigraphically separate occupations shows similarity in the floor area, depth, fire pit and ash pit arrangement and size and depth of main post holes. The structures were also similar in their general lack of storage facilities except for the small bin in House 1. Differences include the shape of houses, entry, number and arrangement of post holes and construction techniques and materials.

Ceramics

A total of 261 sherds were recovered from the floor of House 1. No restorable vessels were found. Flying V Brown is a local plainware that is frequently associated with early pit houses in Vosberg Valley. This type averages 5 mm. in thickness and was finished by the paddle-and-anvil technique. Only about 2% of the sherds from House 1 were decorated. Alexander J. Lindsay, Jr., of the Museum of Northern Arizona examined the decorated sherds and identified them as Kana-a Black-on-White but reported they were a very early Kana-a style. Almost 90% of the sherds found were Flying V Brown and a majority of these were from a four square meter area around the ash pit. (Figs. 3, 6, 8.)

A total of 403 sherds were recovered from the floor of House 2. Excavation in Vosberg Valley has shown that in sites with composite houses like House 2 the most common pottery types are Vosberg Brown and Vosberg Corrugated. These sites have been tentatively dated at A.D. 1050-1250. Vosberg Brown and Vosberg Corrugated were locally manufactured and can be identified by thickness (7mm. average) and added diabase temper. Three areas of House 2 had sherd concentrations (Fig. 3). In the northwest corner, 104 sherds of a large Tonto Red jar were found which had a capacity of approximately 76 liters. In the southeast section of House 2, nine sherds of a Salado Red bowl with a diameter of 25 cm. were found. In activity area 5, (Fig. 3) eight sherds of a Vosberg Corrugated bowl were recovered. The size of this vessel could not be determined. Decorated sherds in this structure were, again, quite limited as they made up about 2% of the total. All decorated wares found in the district are believed to be nonlocal and traded into the area from the north and east (Harris, 1974). Breternitz gives the following dates for types found at AZ P:13:29: Kana-a Black-on-White, best between A.D. 725 and 816 plus. Snowflake Black-on-White, best between A.D. 1100-1200. McDonald Painted Corrugated, best between A.D. 1200-1300. (Breternitz, 1966.)

A comparison of the ceramics of the two houses shows they were similar in the presence of locally made plainware, although in the

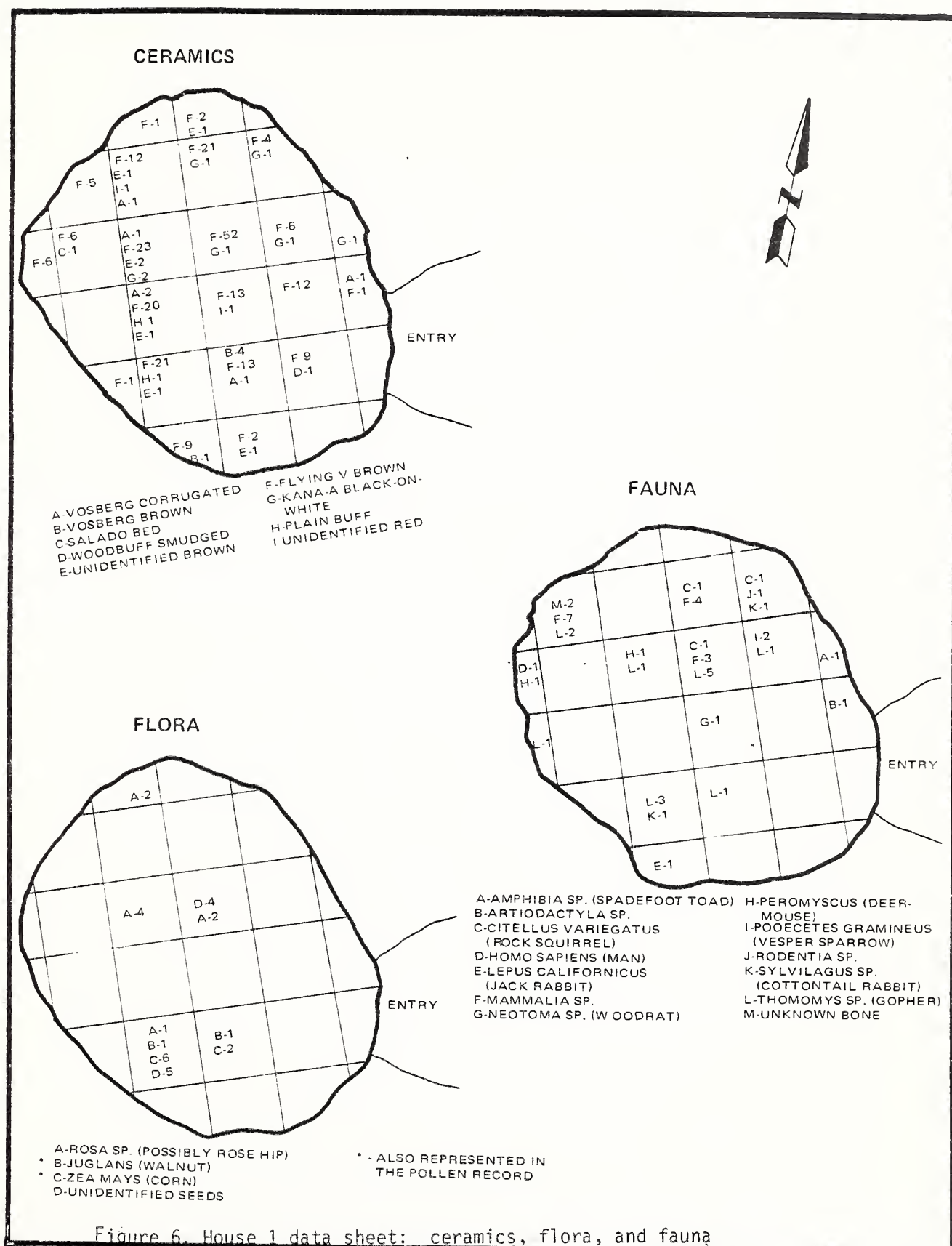
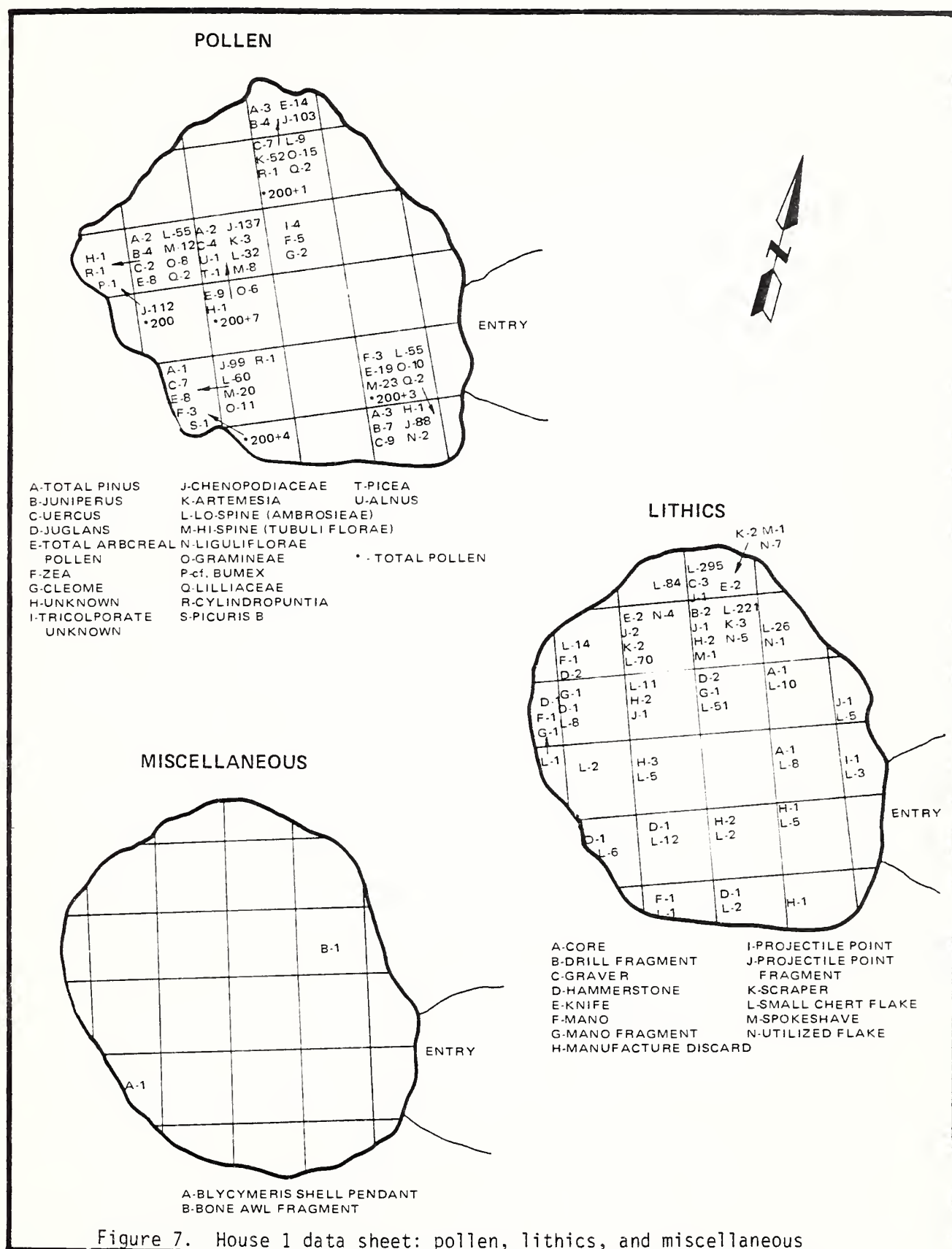


Figure 6



later structure these were thicker. A similarity is also seen in the low frequency of decorated sherds. Differences include the total number of sherds, the dominant ceramic types and the use of corrugated wares in the later occupation.

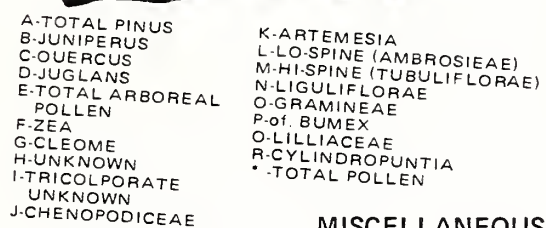
Lithics

A variety of stone tools was recovered from both components. House 1 contained 842 small chert flakes (2.0 x 2.0 cm. or smaller), the majority of which were clustered in an area near the north wall (Fig. 3, activity area 3). Chert artifacts in this area included scrapers, graters, drill fragments, spokeshaves, projectile point fragments, knives, and utilized flakes (Fig. 7). Utilized flakes that were used without postdetachment modification (Wilmsen, 1968: 985). The utilized flakes differed from the knives and scrapers in the degree of retouch and the amount of use. The manufacture discs, flakes larger than the limit established for small chert flakes, were relatively few in number and no concentrations could be discerned. Nine hammerstones were found in House 1. They were associated with plant remains and mano, and mano fragments in activity areas 1 and 2 (Fig. 3). One complete projectile point and six fragments were recovered. Most of these are basal fragments and are from activity area 3.

In House 2, fewer stone artifacts were recovered and the small chert flakes were not clustered in any area of the floor. A metate was found inverted just north of the fire pit. No complete projectile points were found but four fragments of triangular shaped points were recovered. One tabular stone knife and fragments of five others were found at two locations in House 2 (Fig. 9). These knives were made of thin, tabular schist, slate and sandstone and ranged from 3 to 7 mm. in thickness. The one complete specimen was 20 cm. in length and 8.5 cm. in width. Similar artifacts have often been called mescal knives by southwestern archaeologists; however, these could have been used on other plants and materials, so the term tabular stone knife is used in this paper.

Although the ramada was not analyzed in terms of grid units, as explained in the architecture section, a metate and four manos were found in the northwest area in and around a shallow (5 cm.) depression in the diabase.

A comparison of the lithics of the two occupations shows similarity in the type of stone that was used for manos and metates. The same types of chert were used for small stone artifacts. The two structures differed in the amount of small chert flakes and tools. Hammerstones were found only in the early house while tabular stone knives existed only in the later house.



MISCELLANEOUS



LITHICS

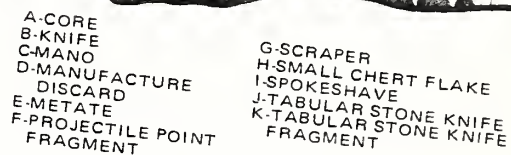


Figure 9. House 2 data sheet: pollen, lithics, and miscellaneous.

Fauna

Bones recovered from the site were analyzed by Thomas W. Mathews and Charmion M. McKusic of the Southwestern Archaeological Research Center, formerly located in Globe, Arizona. They reported (per. comm. 1972) that the bones were minute and fragmentary and almost excluded evidence of larger faunal forms. The gophers are probably post-occupational because there are some very immature individuals present. The whole faunal spectrum secured suggests minimal factors. The people were not using fully the available faunal resources or, somewhere in the site unsampled refuse deposits remain.

The Vesper sparrow remains (Fig. 6) had not previously been reported from an archaeological site in the research center's avian cross file. A few bones of rabbit, squirrel and other small mammals were recovered from each house.

The human bone in House 1 was a small fragment of the zygomatic arch of an infant. In House 2, three small cranial fragments and the right malleus of a young adult were recovered. No burials were found at the site.

Flora

Plant remains were primarily recovered by using flotation and consisted of about two dozen carbonized seeds, a few nut shell fragments and carbonized corn. Small nutlets from House 1 have been tentatively identified as Rosa sp. by Richard Ford of the ethnobotanical laboratory at the University of Michigan. Ethnographic instances of eating rose hips in the southwest are found among the Hopi (Whiting, 1939:78) and the Navajo (Vestal, 1952:31). Ford (1972) noted that these have not been reported previously, but could have constituted a marginal supplement to the prehistoric diet.

Elinor Lehto, curator of the herbarium at Arizona State University, also looked at the remains and independently confirmed the presence of some plants.

In House 2, plant remains of mustard, lamb's quarters or goosefoot and possibly cotton were found. The Malvaceae specimen was tentatively identified as part of a cotton plant. "A prehistoric cotton, Gossypium hopi Lewton, was cultivated by the Hopi. There is, however, no record of its growing wild anywhere in the state." (Kearney and Peebles, 1960:536)

A comparison of the two houses shows that corn and walnuts were present in both and that additional plants were exploited.

Pollen

Five samples from the floor of each house were analyzed by James Schoenwetter of Arizona State University. At the present time, paleoecological and chronological interpretations cannot be made using Vosberg pollen. Adrienne Rankin of Arizona State University is currently researching this problem.

Certain pollen types recovered might reflect past economic activity. The pollen labelled "Picuris B" was found at Picuris Pueblo in the post A.D. 1300 period. Although it is an unknown type, it is believed to have been used economically and is probably of the parsley family (Schoenwetter, per. comm.). Rumex, or wild dock, was used ethnographically by the Hopi as an important source of dye and medicinally for colds (Whiting, 1939:73).

In the data sheets (Figs. 7 and 9), the total pollen + number indicates taxa included and taxa excluded from the adjusted sum (Schoenwetter, 1970).

Miscellaneous

Four additional items were recovered from the floors of the houses (Figs. 7 and 9). In House 1, a glycymeris shell pendant was found along the south wall and a bone awl fragment was recovered near the entry. In House 2, a bone awl fragment was found near the large jar in the northwest corner. The end of the awl fragment had been flattened by abrasion. A light green serpentine bead, 8 mm. in diameter, was found in the eastern section of the house.

Chronology

House 1, as dated by ceramic cross-dating and architectural cross-dating, was probably occupied during the 8th century A.D. House 2 was dated by ceramic cross-dating and dendrochronology to the A.D. 1100-1300 horizon. Although sites with structure similar to House 2 have previously been thought to have existed between A.D. 1050-1250 (Chenhall, 1972) (Cartledge, 1976), a ponderosa pine charcoal sample from the floor of House 2 produced a date of 1225-1272 vv. (Robinson, per. comm.) It is possible that the single date represents an intrusive sample from a later time. Examination of the field records revealed no signs of a pit or other variations of soil and materials associated with the specimen. My own assessment is that the dendrochronological association is valid, and that the later occupation dates to the 13th century.

INTERPRETATIONS

A considerable amount of time and effort went into the construction of both houses at the site. This is suggested by the initial excavation down into the diabase, the dimensions of the post holes and the recovered roofing material.

Stone tools were manufactured in both houses as evidenced by the small chert flakes and manufacture discards. No specific area for this activity was found in House 2 but, in House 1, a workshop existed along the north wall (Fig. 3, activity area 3). This interpretation is based on the clustering of flakes, utilized flakes, scrapers, graters, knives, drill fragments, and spokeshaves in the area. While it cannot be demonstrated that all of the tools were used in the area, cutting and scraping activities were performed. The utilized flakes suggest that as something needed to be cut or scraped, one of the larger small chert flakes was picked up from the floor or knocked off of a core, used once or twice, and then thrown back down on the floor. The basal parts of projectile points found in the workshop suggest that these were broken in hunting activities outside of the house, brought back on the arrow shafts and replaced with new points. The broken points were discarded on the floor. These could also have been broken during the manufacture, however, no top halves were found in the area.

Food preparation and cooking was done in both houses. In House 1, food was prepared in activity areas 1 and 2 (Fig. 3) where manos, mano fragments and hammerstones were found with the remains of corn, walnut, and unidentified seeds. The hammerstones probably served many purposes such as pounding vegetal material, mashing seeds and berries, cracking walnuts and sharpening manos. In House 2, all of the edible plant remains were found in activity area 5 (Fig. 3) with two tabular stone knife fragments, one mano, one projectile point fragment and a partial ceramic vessel. Cooking was performed over hot coals which were regularly transferred from the fire pits to the ash pits for more controlled heat. This interpretation is made on the basis of burned sherds, bones, and seeds associated with the ash pits.

Hunting, gathering and horticultural activities are suggested by the data of both houses. Interpretation of the faunal data suggests that an occasional rabbit or squirrel was brought home to supplement the larder, and, even more rarely, a deer or other large mammal. The gathering of wild plants is indicated by the flora and pollen data. The tabular stone knives of House 2 might have been used in the gathering of agave (century plant) hearts for roasting. The corn found in both houses was probably grown in fields less than 100 m. distant. This statement is supported by the study of agricultural systems in Vosberg Valley (Rodgers, 1970).

Storage evidence is found in the small bin in House 1, although nothing was recovered from it. The large jar in House 2 was crushed when the burning roof collapsed. Had the jar contained seeds or other solid material, it is thought that carbonized remains would have been found. As nothing was recovered, the jar was probably empty or used to store liquids.

The hypothesis that small sites in Vosberg Valley were field houses which were used temporarily and seasonally is not accepted because only one of the four test implications is supported by the data and interpretations. The data do not show 1) the structures were not of permanent architectural construction, 2) only a limited range of activities reflected by artifactual and nonartifactual remains, or 3) means of adapting to seasonally specific climate. The substantial construction of House 2 and the adjacent ramada especially support multi-seasonal occupation. The data only agree with 4) the occurrence of small-volume storage facilities. Both components most probably were permanently inhabited houses with a wide range of activities.

Trash midden, burial and latrine facilities were not recovered at the study area but must have occurred somewhere irrespective of the intensity or duration of occupancy of these structures. Large storage facilities may be located elsewhere also.

Discussion

Recent research in Vosberg Valley suggests a model wherein small and large sites are functionally equivalent and independent. (Cartledge, 1976). Evidence of a wide range of activities (i.e., food grinding, food serving, tool manufacturing) has been interpreted as being performed independently in individual sites. A serpentine bead and one shell pendant have been accepted as evidence of ritual and adornment activity.

Limited spatial distance, centralized ceremonial activity, and the coexistence of large and small sites during the same time span indicate another mode. It is suggested that at the very minimum a degree of connectivity involves the "functional association of spatially separate elements" (Nystuen, 1968:39). Spatial distance between AZ P:13:29 and AZ P:13:7 (a large contemporary site with pit houses and composite structures) is not great, approximately 250 meters; an average three minutes walk. No ceremonial structures existed at AZ P:13:29 or at any other small sites in Vosberg Valley which have been studied to date. However, a ceremonial structure with diameter of 16 meters has been excavated at AZ P:13:7. Comparison of architectural style and shape, ceramics and other artifacts of AZ P:13:7 indicates that it was occupied by peoples of the same cultural group and coexisting in the same time periods, as AZ P:13:29. Although a few fragments of human bone were recovered at AZ P:13:29, no burials were found. A well organized cemetery

existed at AZ P:13:7, however, and the graves contained numerous grave goods.

Research of the extensive agricultural systems which existed in Vosberg Valley may provide additional evidence of connectivity between large and small sites. A system associated with AZ P:13:29 consisted of a diversion wall approximately 35 meters in length and 2-3 meters in width (Rodgers; 1970). The extent of the fields or the amount of crops produced cannot be ascertained. However, it is not unlikely that more than was needed was produced by the few living at the site. The construction and maintenance of the water control systems, and the collection, storage, and redistribution of crops, could have been controlled by administrators at the large site AZ P:13:7.

Evidence suggests that connectivity existed in other areas of the Vosberg Valley although the great mass of data from other large and small sites in the valley has not been similarly analyzed and synthesized. A situation similar to Vosberg Valley is observed in the extreme east-central Arizona sites of Hay Hollow. The A.D. 900-1100 period there is described as having ". . . various indications of intersite social organization and possible redistribution centers . . . These include the scope of irrigation and the clustering of sites grouped around nuclear centers." (Zubrow, 1975:56).

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PAPER NUMBER SEVENTEEN

AN ARCHEOLOGICAL SURVEY OF
AN AREA SOUTH AND WEST OF STINKING SPRING
CIBOLA NATIONAL FOREST, NEW MEXICO

By

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J. Richard Ambler
Gary D. Barber

INTRODUCTION

Pursuant to an agreement dated June 2, 1977, with officials of the United States Department of Agriculture, Forest Service, Cibola National Forest, the Department of Anthropology, Northern Arizona University, conducted an archeological survey of approximately two sections of land considered for possible exchange as part of the Forest consolidation policy. The survey (NAU project 32-NM-G) was performed on July 6, 7, and 8, 1977, by students of the San Mateo Archeological Project Field School directed by J. Richard Ambler, Associate Professor of Anthropology, Northern Arizona University. Direct supervision and coordination of field crews was undertaken by Ambler, assisted by Gary D. Barber and Mark B. Sant. The survey teams recorded 6 sites, most of them historic.

Special thanks go to Michael Gardner of the Forest Service, Mount Taylor Ranger District, for supplying aerial photographs of the survey area and for acting as liaison between the survey crew and the Forest Service.

PROJECT AREA

The area surveyed is situated approximately 14 miles southeast of Gallup, New Mexico, and 9 miles south-southwest of Ft. Wingate, New Mexico, in the vicinity of Stinking Spring of Forest Service Road 191. Specific locational data is available from the Cibola National Forest for authorized researchers.

Physiographically, the area consists of two major zones: the Hogback, a sandstone ridge with a vertical uplift of almost 90°; and low, rolling hills and valleys composed of softer shales, clays, coal, and conglomerate. The area ranges in elevation from 7,180 feet to 7,868 feet above sea level. The area supports a variety of vegetation including ponderosa pine, Douglas-fir, pinyon, juniper (one-seed and alligator), Gambel's oak, serviceberry, yucca (narrow and broad leaf), prickly pear, snakeweed, gramma and other grasses. Concentrations of ponderosa pine, Douglas-fir, and a few aspen are found in the higher elevations in the eastern portion of the project area, while pinyon and juniper are more abundant in the lower elevations to the west. Permanent water, though infrequent in the majority of the project area, does occur at various widely scattered spring locations in the surrounding area, e.g., Stinking Spring. Mammalian species include elk, deer, cottontail rabbit, several types of squirrel, coyote and bobcat.

METHODS

The approach utilized in the archaeological survey stressed an intensive on-foot coverage of the entire project area. Coverage involved field crew members walking linear transects approximately 15 to 20 meters in the lower hills and valleys, and modified transects following natural contours in the higher steep area, particularly in the Hogback portion of the survey area, also at 15 to 20 meter intervals. The purpose of the archeological investigations focused on locating and delineating archaeological or historical resources within the proposed survey area.

SITE DESCRIPTIONS

Six archaeological sites were found during the course of investigations. Descriptions of the sites are provided below with more detailed site data on file at Northern Arizona University. Sites are numbered in the NAU site numbering system.

NM G-10-1

Location: On a nearly flat area at an elevation of 7540 ft.

Cultural Affiliation: Pueblo II-III Anasazi, Pueblo IV Zuni.

Description: The site consists of a rather small, localized sherd and lithic scatter with associated features, including: a small, toppled pile of what appeared to have been coursed slabs; a rectangular alignment of upright sandstone slabs, possibly a mealing bin or hearth; and a dark, charcoal stain area. No definite structural remains (i.e. wall foundations or pithouse depressions) were noted, possibly due to the large amount of sheet erosion at the site location. Of particular interest is the wide range of pottery types occurring within the rather small confines of the site which included: Red Mesa Black-on-white; Escavada Black-on-white; Gallup Black-on-white and possibly early Zuni sherds; as well as various corrugated and plain wares. A functional interpretation of the site with such temporally distinct elements is not practical without further investigations.

NM G-10-2

Location: At an elevation of 7500 ft., Figure 1.

Cultural Affiliation: Possibly Historic Navajo.

Description: The site consists of two piles of burned and fire-cracked sandstone cobbles with associated ash stain. No other cultural remains were observed at the site location. However, the close similarity to historic Navajo roasting pits observed in the San Mateo area of New Mexico argues for a similar origin.

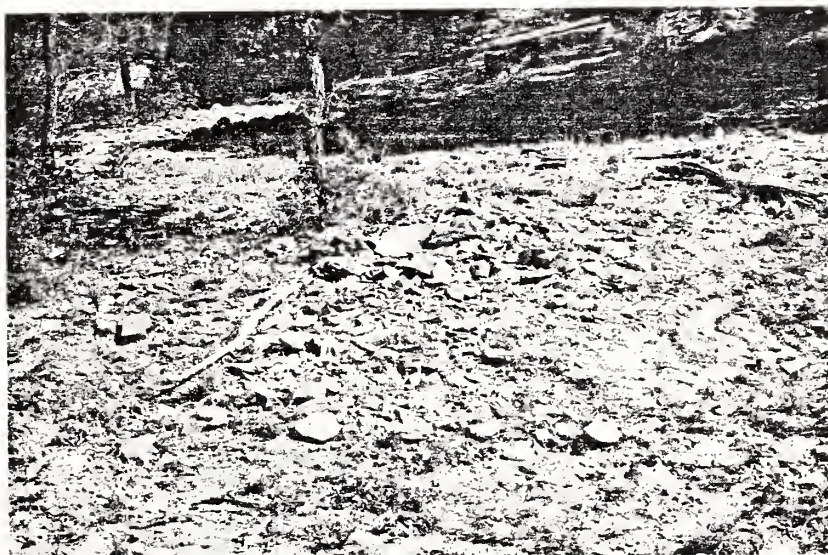


Figure 1. NM-G-10-2, showing burned rocks.



Figure 2. NM-G-10-3, looking south into shelter.

NM G-10-3

Location : Is against the cliffs of the eastern side of the Hogback, at an elevation of 7750 ft., Figure 2.

Cultural Affiliation: Historic Navajo or Anglo.

Description: The site is represented by a small shelter built against an overhang in a sandstone cliff, with upright oak, ponderosa and Douglas-fir poles leaning against the roof of the overhang and forming the outside wall of the shelter. Additional features include a few charcoal flecks and sharpening grooves in the sandstone. No artifactual materials were observed, but axe-cut marks on the end of one of the upright poles indicates the historical affiliation of the site.

NM G-10-4

Cultural Affiliation: Historic Anglo, Figure 3.

Description: The site is a historic log cabin, partially collapsed, with walls averaging three courses of logs high. The logs have been notched at both ends with axe-cuts and chinked with wood fragments. No historic artifacts were observed, and only a few bone fragments, possibly of sheep, and some charcoal stain were present.

NM G-10-5

Location: On the west side of a major valley between ridges of the Hogback, elevation 7750 ft.

Cultural Affiliation: Historic Navajo?

Description: This site consists of a livestock fence constructed of axe-cut juniper and pinyon poles, branches, and trees, crudely piled up to form a barrier to livestock. About 50m. of fence are still visible, extending in a NE-SW direction approximately parallel to the contour of the western side of the valley. It is probable that it once extended across the valley and also further to the west to meet the cliff at the western part of the hogback. A small section of similar fence was also noticed on top of this western part of the Hogback.

NM G-10-6

Location: On top of the eastern portion of the Hogback, elevation 7800 ft., Figure 4.

Cultural Affiliation: ?



Figure 3 NM-G-10-4.



Figure 4. NM-G-10-6, looking westward.

Description: This site is a trail, the most easily visible portion of which extends up (westward) from one of the few places of easy access up the eastern side of the Hogback, across the top of that part of the Hogback, and down into the valley between the two ridges of the Hogback. As a cattle trail, it can be traced sporadically down into the south-east where the valley broadens. Except for the portion within the valley, it does not seem to be used much as a stock trail, for no dung is present. The trail ranges from 30 to 50 cm. wide, is quite distinct and well worn, and in places appears to have had rocks placed or kicked to the sides. The trail appears to be largely or entirely of animal origin, but could have been used or even modified by people. Overhanging branches, however, make it impassable for a horse and rider. Our guess is that it started as a game trail, was occasionally used by prehistoric people, and continues to be used occasionally as a game and stock trail. It is doubtful that it forms a major part of any prehistoric road network.

During the field investigations a fair amount of isolated artifactual materials was encountered. After a reconnaissance of the area around the artifact was accomplished and it was determined as isolated, the artifact was collected, recorded as an isolated find, and its location plotted on both aerial photos and maps. Isolated finds recorded are as follows:

NM G-10-IA-1		3 sherds (Wingate B/R)
"	2	1 flake
"	3	1 biface fragment
"	4	3 sherds (Zuni PIV)
"	5	1 lithics
"	6	1 flake
"	7	1 flake
"	8	1 sherd (Coolidge Corrugated)
"	9	1 flake
"	10	1 flake
"	11	1 flake
"	12	1 sherd (plain ware)
"	13	3 sherds (St. John's Polychrome)

SUMMARY

The area surveyed is scenic and relatively cool in the summer, but at these elevations (almost up to 8000 ft.), the growing season is obviously too short for agricultural activities, so occupation sites were expected to be few in number. This was indeed the case, with only one prehistoric site found that appeared to have been utilized for any length of time (NM G-10-1). However, the area is fairly rich in plant and animal resources, and it was expected that evidence of prehistoric hunting and gathering activities and camps would be, if not plentiful, at least common. Signs of recent logging, herding, and firewood gathering activities, (such as saw-cut tree stumps), scattered Prince Albert cans, roads, and beer cans occur regularly throughout the area, but the area seems to have been utilized only sporadically and lightly during prehistoric times.

Permanently occupied Anasazi settlements would be expected to occur a short distance south of the survey area, where the elevation drops below 7000 ft. Indeed, it was noticed on the aerial photographs that immediately south of the area surveyed there are what appear to be lineal agricultural fields. Anasazi site density would be expected to increase as one moves southward.

If we can assume that resources such as pinyon nuts, yucca, special herbs, and game were at least as common prehistorically as they are today in the Stinking Spring area, then why was there so little aboriginal use of the area?

Several possible explanations of the apparent sparseness of utilization of the area surveyed can be offered. Perhaps the resources here are also found at lower elevations, and there was no need nor desire to go so far from home. On the other hand, perhaps this area was just considered transitional between the lower settled regions and the higher elevations to the north, and hunters and gatherers simply passed through. Perhaps most likely, this area was utilized intensively for hunting and gathering by the Anasazi, but by people living within easy walking distance, hence there would be few occasions when the establishment of a camp away from home would be necessary and upon those occasions when an overnight stay would be necessary or desirable, choice locations such as springs would be chosen. No springs are located within the area surveyed. This last hypothesis is supported by the presence of a moderate number of isolated artifacts, but nothing identifiable as a camp site.

It is obvious that more information is needed from adjacent regions in order to put the archaeology (or lack thereof) of the Stinking Springs area in perspective.

PAPER NUMBER EIGHTEEN

AN ARCHEOLOGICAL SURVEY OF NEW MEXICO HIGHWAY DEPARTMENT
PROJECT I-025-5(23)260 (UP-90) NEAR LA BAJADA HILL,
SANTA FE NATIONAL FOREST, NEW MEXICO

BY

William K. Boyer

INTRODUCTION

From November 8, to November 11, 1976, the Museum of New Mexico conducted an archeological clearance investigation of a proposed highway right-of-way for the New Mexico State Highway Department. Part of the alignment was in the Santa Fe National Forest and the remainder was on private land. The survey was performed by the writer and Denise Fallon, Field Archeologists for the Museum of New Mexico, Division of Anthropology, Contract Archeology Section. William R. Killam, Archeologist for the New Mexico State Highway Department assisted on the final days.

The proposed highway alignment begins in the Santa Fe National Forest 0.8 km. (0.5 miles) southeast of the Intersection of UP-90 and the county road that goes to the village of La Bajada, 4.3 km. (2.7 miles) to the east. The beginning point lies in the NE $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 14, Township 15 North, Range 6 East, NMPM, Sandoval County, New Mexico. From there it continues 2.8 km. (2.3 miles) southeast along the southern boundary fence of the Santa Fe National Forest. It then leaves the National Forest and enters private land belonging to Leland Thompson, Jr., et al. Here the alignment curves south and continues another 1.3 km. (.8 miles) to a proposed intersection with Interstate 25 in the SW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 20, Township 15 North, Range 7 East, NMPM, Santa Fe County, New Mexico. The point where the proposed alignment leaves the National Forest and enters private land is the NW $\frac{1}{4}$ of the SW $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 17, Township 15 North, Range 7 East, NMPM, Santa Fe County, New Mexico.

TOPOGRAPHY, FLORA, AND FAUNA

Cultural resources are the material remains of human behavior. To the extent that differences in the physical world presented problems that required different behavior, those differences, if discernable, can guide us in explaining past behavior. This enables us to give some meaning to cultural resources.

During an archeological clearance survey, it is not possible to go beyond recording the salient features of the present environment. This report will make the assumption that the present environment is very similar to the prehistoric environment that existed at the time the cultural resources were deposited. Any alleviation of the impact of the proposed highway on the cultural resources of the survey area should include an attempt to verify this assumption. This is often possible through analysis of pollen and flotation samples. In addition, a more thorough survey of the distribution and density of flora and fauna with potential economic value should be performed.

There are two basic landforms in the survey area, their corresponding flora and fauna differ. The area within the Santa Fe National Forest is part of a wide mesa top (La Majada Mesa) with minimal relief. There is

only one drainage in the vicinity of the survey which would provide areas for flood water farming by concentrating run-off. It originates in the Mesita de Juana Lopez escarpment and crosses La Majada Mesa in an easterly direction north of the survey area. The distance from the survey corridor to this drainage varies from 800 m. ($\frac{1}{2}$ mile) near the escarpment to about 10 m. (30 feet) at the west end of the proposed alignment. The remainder of the mesa top in the area would receive only direct precipitation. Consequently, only dry farming or irrigation would be alternatives. Other persons studying the agricultural potential of arid-regions for dry farming have concluded that it is a risky endeavor (Calkins 1937:18).

In order to gain preliminary impression of the likelihood that corn or beans could have been grown successfully depending on rainfall alone, data from the region of the survey area (central valley) for the month of July (certain to be one of the growth months) was put into the Blaney-Criddle Formula (Chang 1968:152). From this the consumptive needs of the plants were computed and compared to precipitation records for this region from 1941 to 1970.

The most favorable data (U.S. Department of Commerce 1964, 1965, and 1973) for all variables were used to compute the minimum consumptive needs of these two crops. The minimum need for beans was 10.4 cm. (4.5 inches), which is 50 percent over the maximum recorded rainfall (ibid.) for July in the region (Bernalillo in 1950). The difference for corn was even greater. However, a more complete study of soils and past climates would be desirable to make a more exact determination of what kinds of crops could have been grown.

The vegetation on the mesa top is primarily range grasses and snakeweed. There is also some narrow leaf yucca and prickly pear cactus. A few cholla occur near the western end of the mesa top. The only economically useful plants observed (in a prehistoric context) are the yucca and prickly pear. These, however, have a low density. During historic times the range grasses on the mesa top become economically useful vegetation. This is because the Spanish introduced domesticated animals, and these were raised by both the Spanish and the aboriginal population.

A large number of rodent dens were observed, occurring mainly in small colonies. Jack rabbits are another form of game common to the area (Harris, 1975). Both of these are potential food sources.

The portion of the survey area lying on private land is hilly terrain drained by small gullies and arroyos. The whole area is drained by a large wash. This terrain could be suitable for flood water farming on flat areas at the foot of hills and in alluvial fans. In connection with this observation it should be noted that many small check dams are present in the gullies and small arroyos among these hills. If it were determined that these are in fact prehistoric, it would be a good indication that these areas were used for agriculture, but there is a strong probability that these have been erected in quite recent times and they resemble Civilian Conservation Corps or Soil Conservation Service devices.

The ground cover in this area has the same principal flora as the mesa top but there is less snakeweed and the yucca is much more plentiful. In addition to these plants, pinon and juniper are scattered through this area. A higher density of economically useful plants (yucca, pinon, prickly pear) was noted in this area than was observed for the mesa top. Rodent dens are sparse, indicating a lower density of that kind of fauna in this area.

PROJECT DESCRIPTION

The portion of the proposed alignment that lies in the Santa Fe National Forest is a 61 m. (200 foot) wide corridor. Where it enters into private land, it separates into 3 alternates. The maximum width of the area between the most northerly and southerly right-of-way boundaries in this area is 180 m. (590 feet). The proposed alignments proceed through terrain that is nearly all undisturbed. The construction of the proposed highway will involve movement of heavy equipment and grading operations. This will result in extensive disturbance of the surface and subsurface in the project area.

THE SURVEY

Using maps and an aerial photograph supplied by the Highway Department, the proposed alignment and alternates were located in the field. Within this area a 100 percent on-foot inspection was made for cultural resources. On the plain, a zig-zag transect 15 m. (50 feet) wide and parallel to the centerline of the proposed alignment was followed by each person. In the hilly terrain, the tops and bases of hills and ridges were walked as were the drainages. The slopes were criss-crossed.

The proposed alignment passes through 2 cultural resources (Map 1). One of these is an archeological site and the other is an area of small rock check dams of indeterminate age. The archeological site is a scatter of lithics and a few sherds dating from the late 14th and early 15th century. In addition, 18 isolated occurrences of archeological materials were found. These consist of ceramic and lithic specimens, and include one retouched flake.

ARTIFACT ANALYSIS

Ceramic artifacts were typed by David H. Snow. Lithic artifacts were separated into artifact classes and raw material types, and inspected for evidence of wear under a 30-power binocular microscope. The lithic analysis was performed by the writer.

SITE DESCRIPTIONS

SITE DESIGNATION: LA 14892, Field #59

OWNERSHIP: USDA, Forest Service

DESCRIPTION: The site is a sparse lithic and sherd scatter at an elevation of 5640 feet (1719 m.). It is west of the Mesita de Juana Lopez and 1.4 km. (0.9 miles) northwest of Interstate 25, and is located near the southeastern edge of La Majada Mesa which has a one percent slope to the northwest in this area. In this vicinity, the mesa top is bounded on the east by the Mesita de Juana Lopez escarpment, and on the south by broken terrain and arroyos which drain into Galisteo Creek. The flora and fauna are those of the mesa top described under the Section on Topography, Flora, and Fauna. The site covers an area approximately 20 m. north-south, and 15 m. east-west. All of the cultural material encountered on the surface was collected. These materials are mainly lithic debitage, but also include a biface fragment and four sherds.

CERAMIC ARTIFACTS: These are all Rio Grande Glaze A sherds dating from 1375-1425 A.D. (see Appendix A for analysis form).

LITHIC ARTIFACTS: These include one biface fragment and 29 pieces of debitage, three of which have use traces. A single variety of obsidian is the most common raw material (26 pieces, 87 percent). There are also 3 pieces of basalt (10 percent) and one piece of chert (3 percent).

TABLE 1

Artifact Class	Basalt	Chert	Obsidian	Total	Percent
Biface	1			1	3
Flakes (w/out wear)	2	1	14	17	57
Flakes (w/wear)			3	3	10
Shatter			9	9	30
Total	3	1	26	30	100
Percent	10	3	87	100	

LOCALITY #60

DESCRIPTION: The site is an area of 20-30 small check dams constructed of dry laid rocks. The area lies at an elevation 1706 m. (5600 ft.) in hilly terrain at the eastern foot of the Mesita de Juana Lopez 1 km. (0.6 miles) northwest of Interstate 25. These dams are primarily located on the west side of the main wash which drains this area, and lie in the small arroyos and hillside gullies that feed into the wash. A few were also observed on a hillside on the east flank of the wash. One of these check dams on the west side of the wash could be interpreted as a retaining wall to protect a slope. It was located on the outside of a bend in the

wash and was approximately one meter high by two meters long. These dams are made of dry laid piles of rock in small hillside gullies and the bottom of two minor arroyos. They range in height from a single course to a meter (3 ft.) and their width varies from 1 m. to 4 m. The majority have only a very limited area of alluvial silt backed up behind them and appear to be mainly for erosion control. The area within which these were noted is roughly 250 m. (787 ft.) east-west and 400 m. (1340 ft.) north-south. The flora and fauna of this area are the same as those described above. Only one artifact, a core, was found in the area of these dams. This artifact is described in the Section on Isolated Artifact Localities.

Garth Heaton of the Tesuque Ranger District informed us that the Soil Conservation Service and the CCC worked jointly in the area of the La Bajada Hill constructing similar devices for erosion control. Another person contacted was Ed Bosseau, a friend of the land owner. Mr. Bosseau has run cattle in the area and, while not aware of the existence of these dams, agreed with Mr. Heaton that they could probably be ascribed to CCC activities.

ISOLATED ARTIFACT LOCALITIES

These included 7 localities with only lithic artifacts, 9 localities with only ceramic artifacts, and 2 localities with both lithic and ceramic artifacts. In only one instance were we able to discern any evidence of cultural activities potentially associated with them. This was a core found near one of the check dams at Locality #60. These artifacts were all located on the topographic map and collected.

CERAMIC ARTIFACTS: These span the time period from late Coalition into the Historic Period (1300-1650). They are primarily glaze-ware sherds but include one worked Santa Fe Black-on-white sherd and 3 utility-ware sherds. See Appendix B for analysis forms.

LITHIC ARTIFACTS: These include one retouched flake, one core, 10 flakes, and one piece of shatter. Two of the flakes show evidence of use. The raw materials represented are basalt, quartzite, chert, and obsidian is the most common.

CULTURAL RESOURCES ADJACENT TO THE PROJECT AREA

A prominent hill lies immediately south of the proposed alignment about 240 m. (790 ft.) west of Interstate 25. In the course of checking this hill for sites, 2 isolated pieces of lithic debitage and one glaze sherd were noted. As this area (Locality #67) would not be directly impacted by the proposed alignment, these artifacts were not disturbed.

TABLE 2

Artifact Class	Basalt	Chert	Quartzite	Obsidian	Total	Percent
Core			1		1	6.9
Flake (w/out wear)	2	5		4	11	6.9
Flake (w/wear)				2	2	12.5
Retouched flake		1			1	6
Shatter				1	1	6
Total	2	6	1	7	16	99.5
Percent	12.5	37.5	6	44	100	

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APPENDIX A

LA 14-892

Pottery Analysis Form

Project: 65.26

Activity:

Sheet No:

Site: LA14892

Period: Glaze A (1375-1425)

Recorder: D. Snow

Feature:

Date: 11-12-76

Locus :

Field Specimen No: 0-17

[illegible]

Remarks:

Artifacts:

LITHIC ANALYSIS FORM

Project 65.26

LA14892

Name of Artifact Biface Fragment

Catalog: 0-19

Material: Basalt

Retouching - Dorsal Surface

Facial x

Marginal

Retouching - Ventral Surface

Facial x

Marginal

Longitudinal Edge Shape

Convex

Straight

Concave

Concave-convex

Serrations

Projections

Notch

Transverse Edge Shape

Straight

Curved

Sinuuous

Wear Patterns: none observed

Dorsal:

Step

Feather

Rounding

Striations

Ventral:

Step

Feather

Rounding

Striations

Wear Patterns

Edge Margin

Rounding

Crushing

Grinding

Measurements

Length 1.5 cm (fragmentary)

Width 1.2 cm (fragmentary)

Thickness 0.5 cm (fragmentary)

Edge Angles^o

Present

Cortex

Secondary facets

Bulb of Percussion

Erraillure

Unprepared Platform

Prepared Platform

Heat Treatment

COMMENTS: The fragment represents a corner of a base.

MUSEUM OF NEW MEXICO

LA14892

Laboratory of Anthropology

Field Specification #	Material	Desc.	Length _{mm}	Width _{mm}	Thn. _{mm}	Locus	Remarks
0-18	Basalt	flake	35	35	13		
	Basalt	flake	26	36	9		
	Obsidian	shatter	13	9	3		
	Obsidian	shatter	14	7	5		
	Obsidian	shatter	14	6	4		
	Obsidian	shatter	11	9	3		
	Obsidian	shatter	15	14	6		
	Obsidian	shatter	26	15	7		
	Obsidian	shatter	28	13	8		
	Obsidian	shatter	13	9	5		
	Obsidian	shatter	11	8	3		
	Obsidian	flake	12	18	4		
	Obsidian	flake	10	13	2		
	Obsidian	flake	9	15	4		
	Obsidian	flake	8	12	3		
	Obsidian	flake	16	8	3		
	Obsidian	flake	13	8	2		
	Obsidian	flake	19	16	3		
	Obsidian	flake	12	12	3		
	Obsidian	flake	9	10	2		
	Obsidian	flake	8	11	2		

LA14892

Laboratory of Anthropology

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APPENDIX B

Locality 8 and Isolated Finds

Pottery Analysis Form

Project: 65.26

Activity:

Sheet No:

Site: LA

Period: 1300-1650 AD

Recorder: D. Sn

Feature: Isolated finds

Date: 11-26-76

Locus:

Field Specimen No: 0-4, 0-7, 0-8, 0-14, 0-13, 0-22, 0-23, 0-9, 0-16, 0-21, 0-10

Type	Locality #	# Jar	# Bowl	# Rim	# Body	Total	%
Cieneguilla Glaze-on-Yellow(0-4)	4		x	x		1	
Rio Grande Corrugated (0-7)	8	x		x		1	
Kotyiti Glaze-on-Red (?) (0-8)	10		x		x	1	
Agua Fria Glaze-on-Red (?) (0-14)	42		x		x	1	
Rio Grande Blind							
Indented Corrugated (0-13)	36	x			x	1	
Santa Fe Black-on-white							
(worked sherd) (0-22)	63		x	x		1	
Agua Fria Glaze-on-Red (0-23)	65		x		x	1	
(?) (0-9)							
Cieneguilla Glaze-on-Yellow	11	x			2	2	
Agua Fria Glaze-on-Red (0-16)	56		x		x	1	
Plain Utility (0-16)	56	x			x	1	
Agua Fria Glaze-on-Red(?) (0-21)	62		x		x	1	
Pindi/Santa Fe							
Black-on-White (0-21)	62		x		x	1	
(0-10)							
Cieneguilla Glaze-on-Yellow	25	x			4	4	

Remarks:

Artifacts:

Project 65.26

LITHIC ANALYSIS FORM

Locality #8

Name of Artifact _____

Catalog: 0-5

Material: Chert

Retouching - Dorsal Surface

Facial possibly

Marginal x

Retouching - Ventral Surface

Facial possibly

Marginal _____

Longitudinal Edge Shape Indeterminate

Convex _____

Straight _____

Concave _____

Concave-convex _____

Serrations _____

Projections _____

Notch _____

Transverse Edge Shape

Straight x

Curved _____

Sinuous _____

Wear Patterns

Dorsal:

Step x

Feather _____

Rounding _____

Striations _____

Ventral:

Step _____

Feather _____

Rounding _____

Striations _____

Wear Patterns

Edge Margin

Rounding _____

Crushing _____

Grinding _____

Measurements

Length 1.5 cm (fragmentary)

Width 3.1 cm (fragmentary)

Thickness 0.8 cm (fragmentary)

Edge Angles^o _____

Present

Cortex _____

Secondary facets _____

Bulb of Percussion _____

Erraillure _____

Unprepared Platform _____

Prepared Platform _____

Heat Treatment _____

COMMENTS: The raw material has a lot
of inclusions and flaws.

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Isolated finds

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Field Specifications #	Material	Desc.	Length _{mm}	Width _{mm}	Thn _{mm}	Locality#	Remarks
0-1	Obsidian	flake	13	12	3	1	
0-2	Obsidian	flake	8	10	2	2	
0-2	Basalt	flake	11	9	2	2	
0-2	Basalt	flake	15	12	4	2	
0-3	Obsidian	flake	19	16	3	3	
0-3	Obsidian	flake	12	18	3	3	utilized on one edge-cutting.
0-6	Chert	flake	15	12	4	8	
0-11	Obsidian	shatter	22	12	5	25	
0-11	Obsidian	flake	31	15	4	25	utilized on concave edge scraping
0-12	Obsidian	flake	22	20	5	26	
0-15	Chert	flake	19	19	4	50	coarse material
0-20	Quartzite	core	70	50	36	60	one flake scare-no cort
0-24	Chert	flake	23	27	5	66	coarse material
0-24	Chert	flake	49	30	18	66	
0-24	Chert	flake	44	38	13	66	

PAPER NUMBER NINETEEN

AN ARCHEOLOGICAL REPORT
on the
MATERIALS RECOVERED FROM THE PROPOSED
JUNIPER REMOVAL
ELLSWORTH AND JOHNSON ALLOTMENTS
APACHE-SITGREAVES NATIONAL FORESTS, ARIZONA

By
Julia D. Dougherty

INTRODUCTION

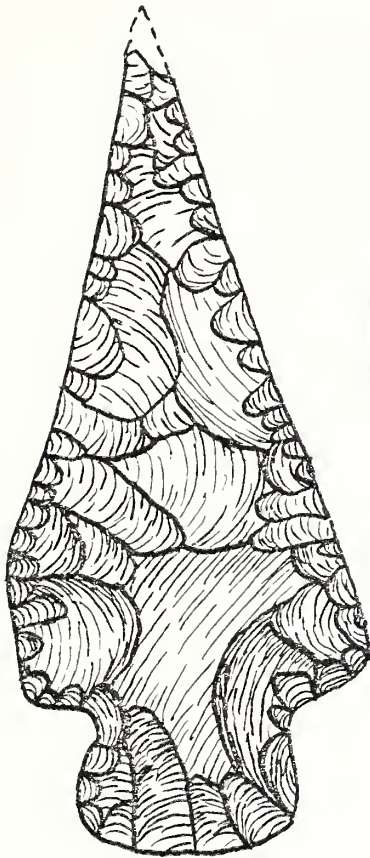
In October of 1976, an archeological clearance survey was conducted for the proposed Juniper Removal of the Ellsworth and Johnson Allotments on the Apache-Sitgreaves National Forests, Arizona. The area surveyed covered approximately 770 acres of National Forest land. The survey, conducted by E. L. Whipple (1976c), consisted of walking in parallel lines from one to four chains apart over the entire area. The only cultural materials found were three projectile points.

ANALYSIS

Analysis of the three projectile points found in the survey will be descriptive in nature. Each was an isolated find in the 770 acres sampled. Two raw materials are represented, chalcedony and chert. Specimens labeled one and three are chalcedony. All materials are of good to excellent flaking quality. Several morphological attributes were recorded, including maximum dimensions, see Table 1. All three projectile points are morphologically similar, and if classified, they might all be called stemmed or laterally notched points (Figure 1). Specimen one and two are approximately the same size, the third being considerably smaller. Number one is the only complete artifact represented. All display evidence of bifacial retouch by the pressure flaking technique (Crabtree 1972).

The behavioral activity represented by the artifacts is obviously hunting. The points might either have been lost or, in the case of the broken ones, discarded over this possible hunting ground. At any rate, this is the only materially represented activity in the area surveyed. As these are isolated finds with no associated artifacts, it is difficult to assess any cultural affiliation. However, when compared with similar artifacts in the area, morphological similarities were found with projectile points from the Hooper Ranch Pueblo, Mineral Creek, and the Thode site in eastern Arizona (Martin, Rinaldo, and Longacre 1961, Martin et al., 1962). Morphological similarities include same general shape and size and basal configuration. According to the conventional cultural boundaries in the Southwest, these three projectile points can be labeled Mogollon. Laterally notched projectile points such as these are common late in the cultural sequence of the area. Earlier points tended to larger, barbed, and diagonally notched (Martin et. al., 1962).

FIGURE 1



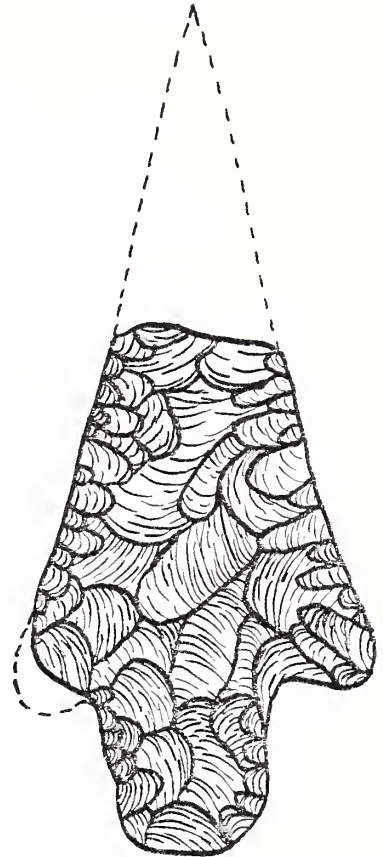
1



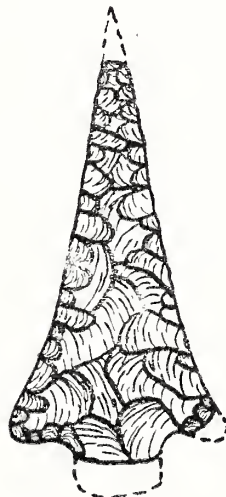
Actual Size



Actual Size



2



3



Actual Size

I.D. #	Base Cond.	Tip Cond.	Max. Length	Max. Width	Max. Thick.	Weight	Bifacial Retouch	Flaking Quality
1	Stemmed	In tact	4.25 cm	1.90 cm	.5 cm	3.4 g	yes	conchoidal
2	Stemmed	Broken	3.30 cm	1.90 cm	.5 cm	3.1 g	yes	conchoidal
3	Broked	In tact	2.15 cm	1.20 cm	.3 cm	.5 g	yes	conchoidal

TABLE 1

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PAPER NUMBER TWENTY

AN ARCHEOLOGICAL REPORT
on the
MATERIALS REMOVED FROM AR-03-10-08-44
SANTA FE NATIONAL FOREST, NEW MEXICO

By
Julia D. Dougherty

INTRODUCTION

In June of 1976, 7 acres were surveyed for archeological clearance in connection with the Oso Well Inlet Pipeline and Primary Transmission Line on the Espanola Ranger District, Santa Fe National Forest. The survey, conducted by Daniel E. Winner (1976), examined 100 percent of the area. Seven lithic flakes were found scattered over the project area. They were found in a drainage bottom which indicates that their placement was probably due to erosion. A site number (AR-03-10-08-44) was given to the collection, however, it cannot be assumed conclusively that these seven flakes are a part of the same assemblage even though they are morphologically similar.

ANALYSIS

This artifact assemblage consists of seven semitranslucent to opaque obsidian flakes. (Figures 1 and 2.) No cores were found in the sample. In addition all of the flakes show signs of utilization and/or retouch. All are secondary decortication flakes having little or no cortex. One of the seven flakes was incomplete, this flake was broken lengthwise and displayed a split bulb of percussion. This condition might be attributed to the process of its manufacture (Crabtree 1972). Several morphological attributes were observed for each flake, including length, width, platform length and width, thickness, and weight (Table 1). Artifacts were not observed microscopically for determination of wear pattern, wear was merely observed and recorded.

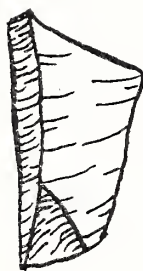
As indicated in the clearance report by Daniel Winner, these flakes most probably washed out of a site occupying a ridge just outside of the Forest boundary (Winner 1976). If we assume that the materials came from this site, no further conclusions can be drawn until the site itself is evaluated. Based upon the nature of the collection, only a descriptive analysis is offered here.

FIGURE 1
Flakes and Debitage

ACTUAL SIZE



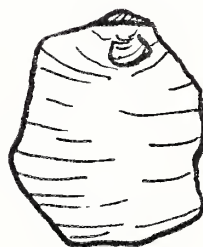
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2



3



4

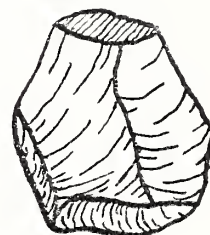
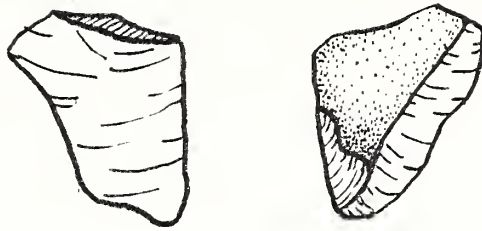
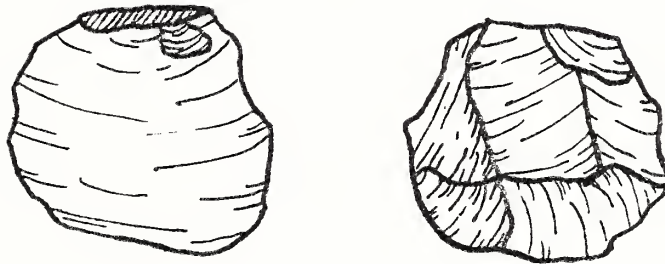


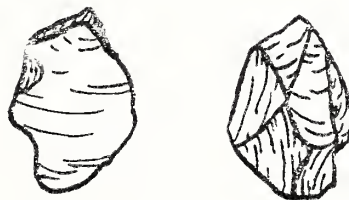
FIGURE 2
Flakes and Debitage



5



6



7

ACTUAL SIZE

TABLE 1
FLAKE IDENTIFICATION

ID Number	Raw Material	Flake Termination				Bidular Flaking	Split End of Percussion	Lipoid	Fissure	Undulations			Presence of Cortex			Platform Preparation		Flake Dimensions			Platform Dimensions				Thickness		Weight (Grams)		Retouch	Wear	Pronounced Conchoidal	Flaking Quality	Comments
		Feather	Hinge	Step	Pervase					Absent	Observable	Pronounced	Errallures	Lateral # of Flake Scars	Platform	Partial Dorsal	Total Dorsal	Abrasion	Crushed	Max Length	Max Width	Ratio LXW	Max Length	Max Width	Ratio LXW	Bulb	Below Bulb						
4	Obsidian	x						x	x	3	x				30	23		15	6		6	4	4.1	x	x			x		Conchoidal	Natural Fracture		
6	"	x							x	4				x	31	33		22	7		8	6	9.3	x	x			x					
1	"	x					x			2					31	17					9	7	3.6	x	x			x					
3	"	RETouched							x	3				x	24	16		16	3		3	3	1.3	x	x			x					
2	"	BROKEN					x			1					13	19		19	5		5	3	1.0	x	x			x					
5	"	x					x	x		2		x			22	23		18	4		6	5	3.2	x	x			x					
7	"	x								3				x	20	16		8	2		3	2	1.3	x	x			x					

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PAPER NUMBER TWENTY-ONE

AR16: A CHIPPED STONE SURFACE SCATTER
MIMBRES VALLEY, GILA NATIONAL FOREST, NEW MEXICO

By
Margaret C. Rugge

Introduction

AR-03-06-05-16 is a chipped stone surface scatter located in the NE $\frac{1}{4}$ of the SW $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 7, Township 16 South, Range 11 West, in Mimbres Valley, Grant County, New Mexico. The scatter is located on the first and second bench west of the Rio Mimbres, the valley's major drainage. Directly south of AR-16 is a small unnamed drainage. To the west, the bench slopes up to a north-south trending ridge, which parallels the Rio Mimbres. East of the site a 150 to 200-meter wide floodplain separates the first bench from the Rio Mimbres. AR-03-06-05-16 will be referred to in this preliminary report simply as AR-16.

The site was located during a survey of proposed improvement areas southwest of the Mimbres Ranger Station. Regional Archeologist Dee F. Green and Gila National Forest Archeologist Joe Janes conducted a systematic intensive survey by "walking all rights-of-way and proposed construction areas" (Janes and Green 1974:1). AR-16 was the only site located during the survey. It has been named the Mimbres Ranger Station Administrative Site, by the Forest Service, because of its location in the construction area.

The light scatter of prehistoric artifactual material at AR-16 consists of 533 chipped stone artifacts and 4 sherds, one of which is historic, extending over two terraces. The upper terrace, designated Locus A, was covered more densely with chipped stone debitage, tools, and cores than was the lower terrace, Locus B. These terraces are composed of riverine deposits which make up the first and second bench overlooking the Rio Mimbres.

Green and Janes collected material from the two terraces as separate loci because of the apparent difference in artifact density. No additional spatial information as to artifact location was recorded since the area was part of a "bone" yard and considerable surface movement of the artifacts had already occurred. (Green, personal communication.) No site map was drawn. Backhoe trenches within the site boundary did not reveal any subsurface cultural material. An Archeological Clearance Report was filed following the surface collection (Green and Janes 1974).

Determination of activity areas or intrasite variation in artifact distribution is difficult for AR-16 due to the surface disturbance and therefore, the recovery strategy. An intrasite study would be limited to the variation observed between Loci A and B. Therefore, this preliminary analysis is focused primarily on comparison of AR-16 with other sites in the Rio Mimbres Valley. An attempt has been made to determine the direction which AR-16 varies from other sites and suggestions are made as to what this variation represents in terms of site use.

Environmental Description

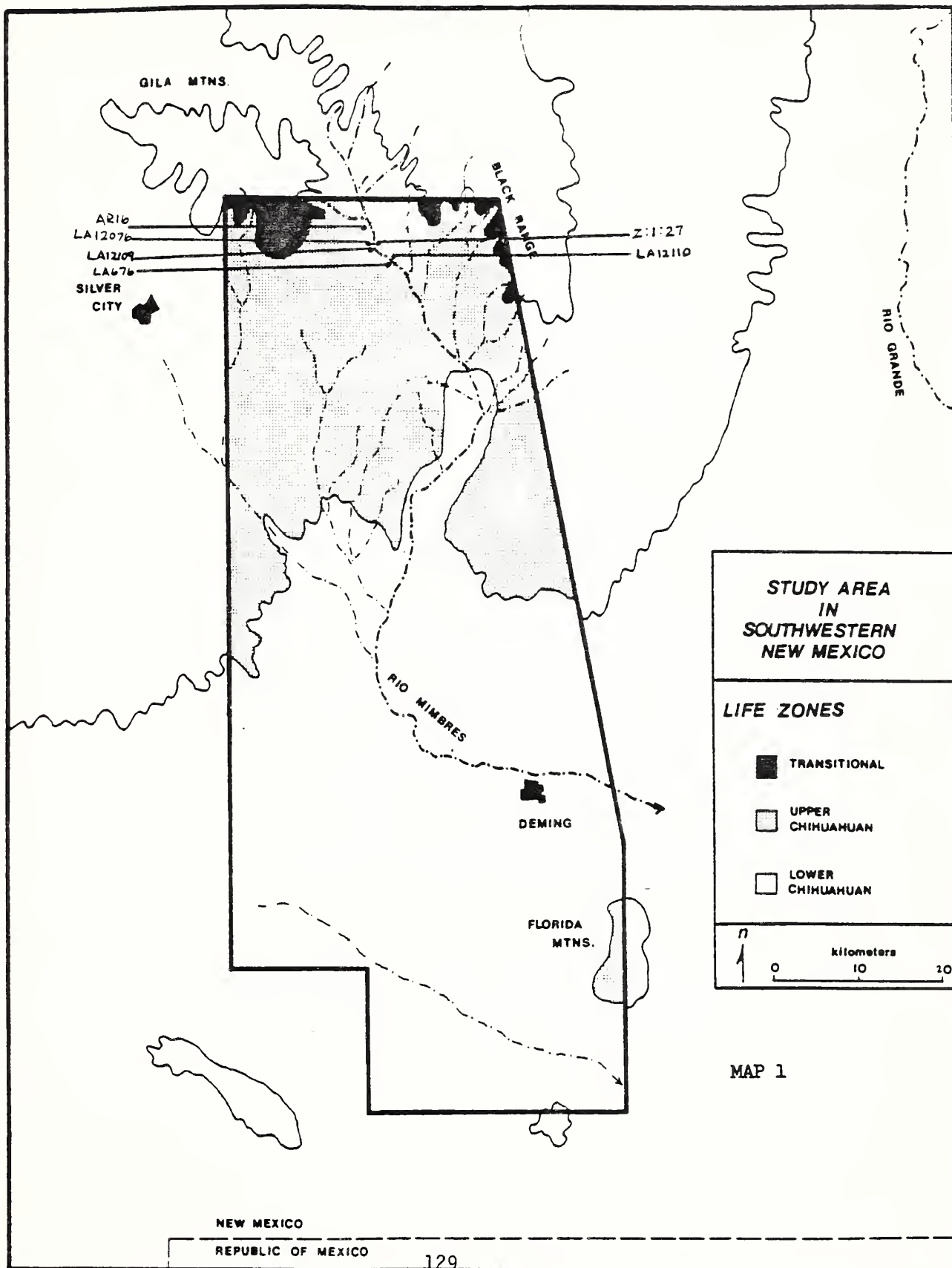
The following environmental description is adapted from Minnis (n.d.). The Rio Mimbres Valley is a major north-south drainage system in the central southwestern portion of New Mexico. Three major vegetation zones are represented along the drainage: Lower Chihuahuan, Upper Chihuahuan, and Transitional (see Map 1). These zones grade into each other but represent distinct floral assemblages. In the two latter zones, the Rio Mimbres and several major tributaries flow perennially. The Rio Mimbres flows above ground only intermittently in the Lower Chihuahuan zone. A riparian community bordering the Rio Mimbres transects all zones.

At an elevation of 6,280 feet (1914 meters), AR-16 is located well within the Upper Chihuahuan zone (5,000-7,500 feet or 1524-2286 meters). Pinon, juniper, and oak predominate with abundant grassland. The area around AR-16 has been characterized as oak-juniper woodland. Janes and Green reported the following vegetation as being present on and in close proximity to the site: alligator juniper, ponderosa pine, skunk bush, oak, and yucca. Within 300 meters east of AR-16 riparian vegetation borders the Rio Mimbres. Vegetation common within the riparian community includes cottonwood, willow, ash, walnut, and alder.

Culture History of the Mimbres Area

The following description and interpretation of Mimbres culture history is adapted from LeBlanc (1975, 1976, 1977). Prehistoric occupation of the Mimbres Valley spans a long period of time. Little archeological evidence is presently available concerning the early, preceramic, and late, historic Apache occupations. Historic accounts make reference to the existence of Apache camps in the Mimbres area. Recent survey in the Arenas Valley has yielded possible evidence of Apache sites (LaVerne Harrington, personal communication). Although the preceramic and Apache occupations are not well known, the sequence of habitation between 0 and 1450 A.D. is fairly well documented (Cosgrove and Cosgrove, 1932; Haury, 1936; LeBlanc, 1975, 1976, 1977; Wheat 1955).

The inhabitants of the Mimbres area from 0 to 1450 A.D. were apparently corn agriculturalists living in sedentary villages. For descriptive purposes this span is divided into five periods: Early Pithouse, Late Pithouse, Classic Mimbres, Animas (Black Mountain phase), and Salado (Cliff phase). The occupation of the valley appears to have been continuous from 0 to approximately 1150 A.D., the end of the Classic Mimbres period. At this time a major shift in ceramics, architectural features, and site distribution occurred. This shift may represent a displacement of population or a major change in organization of the same population. The valley was completely abandoned by 1275 A.D. and only sparsely and briefly repopulated sometime between 1350 and 1450 A.D.



The Early Pithouse occupation, lasting until about 600 A.D., is characterized by small clusters of semisubterranean pithouses located on high knolls overlooking the major drainages. Ceramics from this period are plain and textured wares with San Francisco Red occurring at the end of the period. The Hilltop phase in the Forestdale area of Arizona (Haury and Sayles 1947) and the Pinedale phase and early portion of the Georgetown phase in the Reserve area of New Mexico (Martin, et. al., 1952) are equivalent to the Early Pithouse period.

The Late Pithouse period is marked by a relocation of sites from high knoll to first bench. Villages tend to be larger than in the previous period. By the end of this period, pithouses have become rectangular rather than oval or bean-shaped. The later portion of the Georgetown, San Francisco, and Three Circle phases (Haury 1936) are equivalent to the Late Pithouse period. Ceramics include San Francisco Red, Mogollon Red-on-brown, Three Circle Red-on-white, Boldface Black-on-white, and Boldface Transitional to Classic Black-on-white, as well as plain, textured, burnished, and small-neck banded corrugated wares.

The Classic Mimbres period (1000-1150 A.D.) is characterized by a shift in habitation unit structure from individual pithouses to contiguous surface pueblos. Villages generally remain on the first bench and are often constructed directly over the earlier pithouse structures. Settlements of this period also appear to locate in spatially more diverse environments, including ridge tops, tributary drainages, and extending further north and south along the Rio Mimbres. Also evident during the Classic Mimbres period are small cobble structure sites which appear to be outlyers or field houses. These sites may have been temporarily occupied for the purpose of planting, cultivating, or simple upkeep of agricultural fields (Nelson, Rugge, and LeBlanc, in press). Although this kind of site first appears during the Classic Mimbres period, its appearance may be a reflection of the archeologists' ability to recognize such a site. The cobble masonry of the Classic period makes these otherwise fairly ephemeral, temporarily occupied sites easily recognizable. The ceramics which identify the Classic Mimbres occupation are Mimbres Classic Black-on-white and polychrome, as well as plain, textured, and large corrugated wares.

The apparent in situ cultural evolution in the Mimbres Valley ends about 1150 A.D. with a major shift in cultural pattern. The Animas, Black Mountain phase, occupation displays elements of Chihuahuan affiliation in architecture, ceramics and other traits (LeBlanc 1977). The center of population also shifts to the southern more xeric portion of the Rio Mimbres.

Following the Animas Black Mountain phase, there was a hiatus in occupation from approximately 1275-1400 A.D. The Cliff phase Salado appears approximately 1400 A.D. with a very small population located in the middle and northern Mimbres Valley. A detailed description of this occupation appears in LeBlanc and Nelson (1976).

Previous Investigations in the Vicinity of AR-16

Archeological investigations in the Mimbres Valley have centered on the middle portion of the valley to the exclusion of the northern more forested areas. The early excavations of Bryan (1927, 1931a, 1931b), Cosgrove and Cosgrove (1932), and Nesbitt (1931) were made on sites in the central, prehistorically more heavily populated area of the valley. The more recent investigations of the Mimbres Foundation (LeBlanc 1975, 1976, 1977), the Laboratory of Anthropology, Museum of New Mexico (Anonymous 1970), Graybill (1973) and the Forest Service have recorded archeological data from the northern Mimbres Valley in the vicinity of AR-16.

Because there have been no systematic intensive surveys surrounding AR-16, a 1.6 kilometers (1-mile) radius was arbitrarily selected to provide information as to the kind of sites previously reported and their locations. Sites recorded in this area by previous investigations are described in Table 1 and a map of their location is on file at the Regional Office of the Forest Service. Several sites outside of the 1.6 kilometers radius are plotted on Map 1 as these sites were used in the comparative analysis which follows (see site interpretation).

The investigations of the Mimbres Foundation include both excavation and site survey (LeBlanc 1975, 1976, 1977). Unfortunately, intensive systematic survey of the valley bottom and adjacent bench and ridges extends to 4.0 kilometers south of AR-16. However, the Bradsby site (Y:4:35) 2.75 kilometers northeast of AR-16 was partially salvage excavated as part of the Mimbres Foundation's research. These data were collected for the Forest Service following extensive looting of the site and are currently in the process of being analyzed. In addition, site survey records have been made for some sites within 1.6 kilometers of AR-16. These sites were located by the landowner and recorded with his permission and assistance and were not the result of systematic site survey.

The Museum of New Mexico Laboratory of Anthropology conducted a survey to inventory cultural resources in the proposed Mimbres Reservoir District 0.4 to 1.7 kilometers north of AR-16. Due to time limitation, the survey was designed to investigate areas which would most likely contain sites, and it focused on land to be directly impacted by the construction of the reservoir (Anonymous, 1970). As the reservoir was never constructed and the sites were therefore not impacted, no mitigation measures were carried out. No analysis of survey material is currently available.

Graybill's survey focused primarily on the northern Mimbres area extending from north of the three forks of the Rio Mimbres to approximately 0.5 km. south of AR-16. This survey data was used by Graybill for his interpretation of the settlement patterns during the Mogollon occupation of the valley. Although the survey was described as intensive, the factors regulating the selection of land to be sampled are not clear from his report. There are several sites recorded at a later date within his survey area, particularly, chipped stone surface scatters (see Table I). No analysis of surface artifacts other than ceramic identification has been made available.

One of the sites located by Graybill, G152, later renumbered Y:4:6, has been excavated by Hogg (1977). Site Y:4:6 is a single, early pithouse and surface scatter. Hogg excavated the entire pithouse. Unfortunately, his artifact analysis includes only identification of ceramic types and the few stone artifacts associated with the floor of the pithouse (Hogg 1977:69-72).

Site recording and excavation conducted by the Forest Service in the Mimbres District is dictated primarily by potential impact in specific project areas. Therefore, site survey is systematic within the confines of the impacted area. Occasional sites are also recorded by Forest Service officers. No analysis has been made of surface material from sites recorded in the 1.6 km. vicinity of AR-16.

Although the area immediately surrounding AR-16 has never been systematically intensively surveyed, it is clear that sites representing the Mogollon-Mimbres occupation are present. The preponderance of Mogollon-Mimbres sites is characteristic of this northern portion of the valley. The lack of earlier and later sites may represent actual prehistoric disuse or may result from difficulty in temporal identification. Scatters of chipped stone, for instance, are difficult to place in a temporal framework.

Establishing the spatial relationship between AR-16 and other sites is difficult. The vague temporal placement of the site as well as the lack of systematic site recording around AR-16, limit spatial interpretation. A detailed analysis of the spatial relationships and surface material from a systematically recorded sample of sites should aid in both temporal and spatial interpretation of chipped stone surface scatters in this region.

Strategy Of Site Interpretation

Interpretation of site function and dating of AR-16 is problematic due to the lack of comparative data within the Mimbres Valley. There have

TABLE 1: Prehistoric Sites in the Vicinity of AR-16

<u>Site Number</u>	<u>Temporal Affinity</u>	<u>Basis Temporal Placement</u>	<u>Site size</u>	<u>Recorder</u>	<u>Comments</u>
Y:4:10	Classic	architecture	ca 2 cobble rooms	Mimbres Foundation	
Y:4:11	Classic	ceramics	ca 20-40 cobble rooms	Mimbres Foundation	
Y:4:13	Classic	architecture	ca 2 cobble rooms	Mimbres Foundation	
Y:4:14	Classic	architecture	1 cobble room	Mimbres Foundations	
Y:4:15	Classic	architecture	1 cobble room	Mimbres Foundation	
Y:4:16	Classic	architecture	1 cobble room	Mimbres Foundation	
unnumbered site	Classic	architecture	?	Mimbres Foundation	
LA5063	Late Pithouse Classic	ceramics	1 pithouse 10-12 cobble rooms	Laboratory of Anthropology	
LA5064	?	---	100 M ²	same as above	lithic scatter 1 sherd
LA5066	Late Pithouse Classic	ceramics	2 pithouses 50-100 cobble rooms	same as above	4 room blocks
LA5067	Late Pithouse Classic	ceramics	1-2 pithouses 10 cobble rooms	same as above	
LA5068	Late Pithouse Classic	ceramics	1 possible pithouse 4-5 cobble rooms	same as above	

TABLE 1 (continued)

<u>Site Number</u>	<u>Temporal Affinity</u>	<u>Basis Temporal Placement</u>	<u>Site size</u>	<u>Recorder</u>	<u>Comments</u>
LA5069	Late Pithouse Classic	ceramics	2-3 possible pithouses 5-6 cobble rooms	same as above	
LA5070	?	---	400 M ²	same as above	lithic scatter
LA5072	?	---	2625 M ²	same as above	lithic scatter
LA5073	?	---	25 M ²	same as above	lithic scatter
LA5075	?	---	400 M ²	same as above	lithic scatter
LA5076	Classic	ceramics	1 possible pithouse 3 cobble rooms	same as above	high proportion of lithic artifacts
LA5070	? Pithouse	pithouse depression	1-2 pithouses	same as above	no ceramics
G1*	Classic	ceramics	xca 3 cobble rooms (30M ²)	Graybill	
G2	Late Pithouse Classic	ceramics	ca 19 cobble rooms (213M ²)	Graybill	maybe same site as LA5076 or FS Site A
G3	Late Pithouse Classic	ceramics	ca 130-138 cobble rooms (1525M ²); 4 roomblocks	Graybill	may be same site as LA5066 or AR-03-06-05-14
G4	Classic	ceramics	ca 3 cobble rooms (33M ²)	Graybill	
G5	Classic	ceramics	ca 32-34 cobble rooms (380 M ²)	Graybill	may be same site as LA5063

TABLE 1 (continued)

<u>Site Number</u>	<u>Temporal Affinity</u>	<u>Basis Temporal Placement</u>	<u>Site size</u>	<u>Recorder</u>	<u>Comments</u>
G6	Classic	ceramics	ca 11-12 cobble rooms (128 M ²)	Graybill	may be same site as LA5068
G7	Classic	ceramics	ca 20-22 cobble rooms (250 M ²)	Graybill	
G8	Classic	ceramics	ca 6-7 cobble rooms (75 M ²)	Graybill	may be same site as LA5069
G83	Classic	ceramics	ca 5-6 cobble rooms (65 M ²)	Graybill	
G88	Classic	ceramics	ca 4 cobble rooms (46 M ²)	Graybill	
G144	Classic	ceramics	ca 5 cobble rooms (63 M ²)	Graybill	
G145	Classic	ceramics	ca 3 cobble rooms (35 M ²)	Graybill	
G152 (Y:4:6)	Early Pithouse	ceramics	1 pithouse	Graybill	excavated by Hogg (1977)
FS ⁺ Site A	Late Pithouse Classic	ceramics	8-10 cobble rooms	Forest Service	may be same site as LA5067 or G2
AR-03-06- 05-14	Late Pithouse Classic	ceramics	ca 30 cobble rooms	Forest Service	may be same site as LA5066 or G3
Y:4:8	Classic	architecture	1 cobble room	Mimbres Foundation	
Y:4:9	Classic	architecture	ca 2 cobble rooms	Mimbres Foundation	

Notes:

*"G" designation given to all Graybill site numbers listed in this report.

^xRoom number estimates are derived from Graybill's estimates of room area using 11-12 M² as an average room size.

⁺"FS" designation given to sites recorded by the Forest Service but not yet assigned a site number.

been no systematic studies of surface scatters in the Mimbres area from which general statements concerning the nature of surface scatters can be made. There are no reports available which describe and interpret the artifactual material from sites in the vicinity of AR-16 to which comparison can be made. In general, there is no established framework for analysis of archeological material from AR-16.

The nature of the artifact collection from AR-16 presents additional problems in placing the site into the temporal framework described previously. There were very few recognized, potentially temporally diagnostic artifacts collected. There were no obsidian artifacts present, which would be potentially datable. There were no recognizable surface or subsurface structures diagnostic of a particular period or from which tree-ring samples might have been available.

The preliminary interpretation of AR-16 must be made within the limitations of these considerations. Preliminary placement of AR-16 into a temporal framework will be made by reference to established diagnostic artifacts and with reference to the temporal range of recorded sites in the vicinity. The four sherds are the only presently recognized potentially diagnostic artifacts collected. The bifaces from the site are triangular and square based, a style common to all Mogollon-Mimbres and later period occupations in the Mimbres area (Fitting 1972). This is not to suggest that ceramic design and biface form are the only potentially temporally sensitive classes of data. Cores and chipped stone tools and debitage of any kind are potentially time sensitive as to form, but no standards of formal change in these artifacts through time has been recognized for the Mimbres area.

Preliminary determination of site use is more difficult. If it is feasible to assume that sites recorded by the previous surveys and excavations are representative of the occupation of the northern Mimbres, then data from these sites can be used as a standard to which AR-16 can be compared. There are two obvious problems with this approach. First, previous survey may not have adequately recorded or recognized earlier Cochise and later Apache sites. Assuming, however, that the present site sample is representative, AR-16 can be compared to these sites to determine whether and in what ways it varies. However, the second problem is that for sites in the 1.6 km. vicinity of AR-16 only ceramic identifications and estimates of the number of habitation units are available. As nearly all of the artifacts collected from AR-16 are chipped stone, comparison should be made with sites for which data is available on the chipped stone. For this reason, the site sample to be compared with AR-16 will be drawn from a broader area within the Mimbres valley. This sample will be described in the Site Interpretation section.

Approaching the question of site use, White (1968:170) has suggested that campsites would likely yield a more specialized, less diverse range of artifacts. Conversely, Gould (in press) suggests that in lithic assemblages from habitation sites, "the widest variety of stone tool types and raw materials . . . will tend to occur." The range or degree of artifact and raw material diversity present at AR-16 can be measured by reference to known permanent habitation sites in the Mimbres valley. Comparison of the range of artifact classes, formal diversity within each class, and range of raw material use are possible measures. Specialization of activities can also be measured by the ratio of ceramics to other commonly used classes of artifacts. The ratio of sherds to chipped stone artifacts should be fairly constant for all habitation sites within the valley, reflecting the use of ceramic vessels as cooking and storage facilities at these sites. Specialized campsites or activity sites should contain fewer sherds, depending on the nature of the specialized activities.

To reemphasize, application of these relative comparisons for determining site use requires two assumptions. First, it must be assumed that AR-16 is both temporally and spatially similar to the sites with which it is to be compared. If not, the observed differences may not be a reflection of site use. Second, it must be assumed that the standards of comparisons selected are applicable to determination of site use.

A second standard for relative comparison can be established which aids in interpreting the activities represented by AR-16. This standard is derived from observations of the natural availability of lithic material and applies to stone artifacts only. Comparison of the use of raw materials to the actual availability of raw materials results in a determination of the range of local and exotic materials used and a measure of material selectivity.

The form of interpretation outlined above provides a means for more fully describing a site than merely by providing tables of artifacts and site dimensions. However, this description does not provide an explanation of how AR-16 articulates spatially and temporally within the pre-historic occupation of the valley. It is not possible, given this type of analysis, to state why such a surface scatter was produced. However, identification of the nature of activities represented at the site and its temporal affinity are necessary steps in the process of explanation. Further interpretation of AR-16 would require a systematic archeological investigation of the portion of the Mimbres Valley in which it is located.

Method of Chipped Stone Data Recording

Two kinds of data were recorded concerning chipped stone. The first was derived from an initial sort of the surface collections. These data describe, in general, the collection of chipped stone from AR-16. The second kind of data concerns availability of stone material in the vicinity of AR-16.

The first data set provides a preliminary description of the chipped stone material by grouping the artifacts as retouched tools, cores, and flakes (see Tables 2-4). Of the 533 chipped stone artifacts, only 38 are retouched tools. This lack of shaped retouched tools is typical of Mimbres Valley sites (Nelson, Rugge, LeBlanc: in press; Fitting 1972). Utilized flake tools with no evidence of retouch appear to be the most abundant tool class (Nelson, Rugge, LeBlanc: in press). Unfortunately, distinguishing surface weathering and fortuitous attrition from wear retouch due to use is difficult and unreliable in the analysis of surface collections (Hester et al., 1973:92). Furthermore, the materials had been driven over and otherwise disturbed for several years. Therefore, only those artifacts from AR-16 exhibiting evidence of retouch were analyzed as tools.

The flake material has been sorted according to two sets of attributes: raw material and flake morphology. Two criteria were used in establishing the raw material categories. The first was rock texture, which influences flaking characteristics of the material (Semenov 1964). The second criterion was petrogenesis, or origin, which is directly related to the source area of the material. As both texture and petrogenesis were considered in developing these material categories, not all categories have equal petrologic significance. Glassy rhyolite and rhyolite, for example, are much more similar petrologically than are chert and rhyolite. Definitions of the raw materials are given in Appendix 1.

The second attribute, flake morphology, provides information pertaining to general elements of tool production (Cameron 1977; Geier 1973). Beyond production technique, the kinds of tools which were produced and used can be inferred from flake morphology (Frison 1968; Nelson, Rugge, LeBlanc; in press). Three flake groupings were used: core preparation flakes, biface thinning flakes, and other flakes. Core preparation flakes are those on which cortex covers at least 1/6 of the dorsal face, and includes squarish chunky flakes which can result from core rejuvenation. Core preparation flakes are the result of attempts to remove cortex or renew striking platforms on a core. They may be purposefully produced as a desired tool for certain tasks requiring relatively thick flakes with cortex along at least one edge. This category includes primary and

TABLE 2: Chipped Stone Artifacts from Locus A

By Weight (in grams)

	<u>BASALT</u>	<u>RHYOLITE</u>	<u>GLASSY RHYOLITE</u>	<u>CHALCEDONY</u>	<u>CHERT</u>	<u>JASPER</u>	<u>QUARTZITE</u>	<u>TOTAL</u>
FLAKES	1984.5	2907.0	170.0	161.0	37.0	8.5	36.0	5304.0
RETOUCHED TOOLS	112.5	775.0	194.0	29.5	0	0	4.0	1115.0
CORES	1103.5	768.0	0	10.0	0	0	0	1881.5
TOTAL	3200.5	4450.0	364.0	200.5	37.0	8.5	40.0	8300.5

By Count

FLAKES	114	190	18	59	2	4	4	391
RETOUCHED TOOLS	3	17	2	7	0	0	1	30
CORES	2	6	0	1	0	0	0	9
TOTAL	119	213	20	67	2	4	5	430

TABLE 3: Chipped Stone Artifacts from Locus B

By Weight (in grams)

FLAKES	561.0	1220.5	31.5	36.5	0	0	0	1849.5
RETOUCHED TOOLS	132.0	250.0	0	4.0	0	0	0	386.0
CORES	0	129.5	0	12.5	0	0	0	142.0
TOTAL	693.0	1600.0	31.5	53.0	0	0	0	2377.5

By Count

FLAKES	15	62	4	12	0	0	0	93
RETOUCHED TOOLS	1	6	0	1	0	0	0	8
CORES	0	1	0	1	0	0	0	2
TOTAL	16	69	4	14	0	0	0	103

TABLE 4: Chipped Stone Artifacts from Loci A and B

By Weight (in grams)

	<u>BASALT</u>	<u>RHYOLITE</u>	<u>GLASSY RHYOLITE</u>	<u>CHALCEDONY</u>	<u>CHERT</u>	<u>JASPER</u>	<u>QUARTZITE</u>	<u>TOTAL</u>
CORE PREPARATION	1121.0	1966.5	65.0	119.0	35.0	2.0	11.0	3319.5
FLAKES	1121.0	1966.5	65.0	119.0	35.0	2.0	11.0	3319.5
BIFACE THINNING FLAKES	0	0	0	0	0	0	0	0
OTHER FLAKES	1424.5	2161.0	136.5	78.5	2.0	6.5	25.0	3834.0
BIFACES	40.0	216.0	4.0	29.0	0	0	4.0	293.0
UNIFACES	205.0	809.5	20.0	4.5	0	0	0	1039.0
CORES	1103.5	897.5	0	22.5	0	0	0	2023.5
TOTAL	3894.0	6050.5	225.5	253.5	37.0	8.5	40.0	10509.0

Percentage of each
material from total
weight

	37.0	57.6	2.1	2.4	0.4	0.1	0.4	
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By Count

CORE PREPARATION	48	81	5	17	1	1	2	115
BIFACE THINNING FLAKES	0	0	0	0	0	0	0	0
OTHER FLAKES	81	171	17	54	1	3	2	329
BIFACES	2	9	1	6	0	0	1	19
UNIFACES	2	14	1	2	0	0	0	19
CORES	2	7	0	2	0	0	0	11
TOTAL	135	282	24	81	2	4	5	533
Percentage of each material from total	25.3	52.9	4.5	15.2	0.4	0.8	0.4	

secondary decortication flakes as described by White (1963), shatter as described by Geier (1973), and core rejuvenation flakes. Biface thinning flakes are the by-product of the very controlled flaking technique by which a bifacially flaked edge is produced on a tool. Projectile points are shaped, thinned and retouched by this technique; the flakes removed by low intensity percussion and pressure flaking along the edge of the projectile point are biface thinning flakes. These flakes exhibit a small "beak" at the striking point on the ventral face rather than a platform or bulb of percussion. Frison (1968:149) and Chapman (1977:421) have referred to these as bifacial retouch flakes. Geier uses the label "tertiary" and "retouch" flaking (1973:10). The category "other" includes all flakes removed from a core following core preparation or rejuvenation.

The second data set, natural availability of pebble to cobble size lithic material, was estimated for the area immediately surrounding the site (within .4 km.). This is not to suggest that .4 km. is the "catchment area" or only area exploited for its resources. Rather, the .4 km. range is that area in which time investment for procuring lithic resources is minimized.

Lithic material immediately surrounding AR-16 is composed of volcanics, and to a lesser degree, metamorphosed Paleozoic sediments and crypto-crystalline silicas. These materials occur as primary outcrops, pebbles and cobbles in the local conglomerate, and as pebbles and cobbles in the bedlag deposits of local streams and the Rio Mimbres. These materials are available in the following proportions:

Basalt:	60-70%
Rhyolite:	30-40% (of which up to 5% is glassy rhyolite)
Chalcedony:	Trace
Dolomite:	Trace to 5%
Quartzite:	Trace to 1%
Quartzite:	Trace to 1%
Latite Porphyry:	Trace

Many of the percentages are presented as ranges because the availability of the material differs within the .4 km. area where the data were collected. All materials not naturally available are considered exotics, meaning that time investment required for their aquisition is increased. Jasper is the only exotic material present in the collection form AR-16.

Site Interpretation

Present knowledge of the spatial distribution of sites and the characteristics of habitation sites in the Mimbres Valley leads to the suggestion that AR-16 was a specialized activity site dating to the Mogollon-Mimbres occupation. It is further suggested that AR-16 was used for plant or hide processing activities involving heavy scraping. The site does not appear to be a temporary hunting camp, butchering site, or quarry. These suggestions for temporal affinity and site use will be addressed in the following section.

Discussion of the chipped stone artifacts does not differentiate the materials from loci A and B. Initial analysis suggested that their difference is primarily the sample size. The intensity or duration of the use of locus A may have been greater than for locus B, resulting in a larger total number of artifacts. Similarity in artifact and material classes suggests that the kind and diversity of activities was similar.

Several lines of evidence suggest that AR-16 may likely date to the Mogollon-Mimbres occupation (0-1150 A.D.) of the valley. There were no sites from other time periods located by previous surveys in the vicinity (1.6 km.) of AR-16. In addition, the presence of two plainware sherds and one red ware sherd suggests, although not strongly, that this is not an earlier Cochise site. The fourth sherd is modern ceramic. In a more detailed study of survey surface collections (Narod, in progress) and excavated site collections (Rugge, in progress) from the Mimbres Valley, formal attributes of the chipped stone tools and debitage from AR-16 will be compared with sites of known temporal affinity. This more detailed analysis should contribute to determining the temporal placement of AR-16.

At this preliminary stage of analysis, assuming that AR-16 was occupied between 0 and 1150 A.D., relative comparisons are made between the artifacts from AR-16 and those from several habitation sites in the Mimbres Valley in order to determine site use. Although these sites are outside the 1.6 km. area surrounding AR-16, they are the closest spatially to AR-16 for which data from quantitative collections of ceramics and chipped stone artifacts are available.

The habitation sites selected for comparison are Mogollon-Mimbres occupations, although the spatial-temporal diversity of the sample is skewed. Only the Late Pithouse and Classic Mimbres periods are represented from the northern valley. Two sites located 4.0 km. south of AR-16 were selected because they are the closest spatially for which analysis of the chipped stone sample is well underway. Being in the north valley they are in the Upper Chihuahuan Zone, yet in a less wooded environment than AR-16. LA 12076 is a Classic Mimbres site; Z:1:27 is a Late Pithouse site. Also included from the north valley is an apparent

specialized activity site, LA 12109, from the Classic Mimbres period. Although cobble structures were constructed, it has been argued elsewhere that the site was repeatedly, temporarily occupied for conducting agricultural field tasks (Nelson, Rugge, and LeBlanc in press). This site provides an interesting comparison to AR-16, which may represent a specialized activity site, as well. In order to include the full temporal range desired, two sites from further south were selected. LA 12110, an Early Pithouse site, was chosen as representative of the early aspect of Mogollon occupation. LA 676, a Classic Mimbres site, was chosen as a control for the spatial variation which might exist between these two sites and those from further north. Both LA 12110 and LA 676 are situated in an open oak-juniper margin environment. All sites are located on Map 1.

Clearly, AR-16 differs from the habitation sites in that no surface or subsurface living structures are discernible. However, this assumption of nonhabitation could be a figment of archeological recording in that surface scatters have not been adequately investigated. The category "habitation site" may very well include sites without obvious remains of habitation structures. Conversely, the presence of such structures may not necessitate permanent habitation, as in the case of LA 12109, but it is one of several indicators.

The first comparison of artifact samples involves the degree of activity specialization or diversity. This diversity is first measured by the variety of tool classes present. It is suggested that a permanent habitation site will display a wide variety of tool classes while a specialized activity site will have a more limited range. By comparison to the samples from habitation sites, the artifact sample from AR-16 is lacking in diversity of artifact classes. There are no manos, metates, hammerstones, axes or ornamental materials. There are also very few sherds. Relative to the habitation site sample, AR-16 shows less diversity in classes of artifacts. LA 12109 shows the same lack of diversity in artifactual material containing primarily chipped stone, with a few sherds and one groundstone tool. However, the prior disturbance of AR-16 may have effected the diversity of artifacts present; although, all sites discussed here have been somewhat looted.

Diversity within each artifact class could also be considered a measure of the range of activities represented at a site. Based on a very cursory viewing of the artifacts, pending further analysis, it appears that all of the bifaces from AR-16 are roughly triangular. The more detailed analysis of tool types, in progress, will provide a better description of the range in morphological diversity of the chipped stone tools from AR-16.

A third comparison designed to measure specialization of site activities involves the quantity of ceramics present on a habitation site. It is suggested that numerous activities associated with habitation in the Mimbres Valley require the use of ceramic vessels (storage and cooking facilities). The remains of such vessels should be present on habitation sites in a standard ratio of sherds to chipped stone material for habitation sites in this sample is roughly 2/1. The ratio for AR-16, 4/533, differs greatly from this standard as does the ratio for LA 12109, 20/772. Both AR-16 and LA 12109 appear to have few ceramic cooking and storage facilities represented in their artifactual sample suggesting a specialized activity focus rather than permanent habitation. A better measure of use of ceramics might have been the ratio of sherds to site area. However, no other sites have been completely surface collected or adequately sampled to provide a comparison to AR-16.

The above series of relative comparisons does suggest that AR-16 differs from the permanent habitation site sample in the direction of less diversity of artifactual material. It has been argued that specialization of site activity is responsible for this lack of diversity. From these comparisons it is also clear that AR-16 is more similar to LA 12109 than to the habitation sites.

As stated earlier, the natural availability of lithic raw material can be used as a standard to which the chipped stone artifacts from AR-16 can be compared. The above intersite comparisons suggest that AR-16 is not a permanent habitation site. If instead AR-16 is a specialized activity site for exploitation of a localized or specific resource, it would be unlikely that activities would extend beyond the site boundaries. Therefore, it is unlikely that stone material not immediately available would have been used, unless the site activities required a specific exotic material. Exotic material comprises less than one percent of the total material used for chipped stone tools and debitage at AR-16. Clearly, AR-16 is substantially lacking in the presence of exotic materials. There are no tools or cores of exotic material. The habitation sites sampled have a range of greater than two percent to approximately six percent exotic materials, while LA 12109, like AR-16, has less than one percent exotic material. Again, AR-16 is more similar to LA 12109 than to the habitation sites.

Comparing the natural availability proportions (Data Recording section) with use proportions for each raw material type (Table 4) from AR-16, there does appear to be selection in the use of available material. More specifically, rhyolite (nonglassy) is the most highly selected material. In a previous study of chipped stone material from excavated sites in the Mimbres Valley nonglassy rhyolite was grouped with basalt and quartzite as coarse raw material. Coarse material included all crystalline and grainy materials for which the structure of the rock would effect flaking characteristics causing a more angular, less conchoidal fracture (Nelson, Rugge, and LeBlanc in press). It was suggested in this earlier study that the tools most efficient for processing plant material would be coarse textured with a broad edge angle. Where the proportions of these attributes in the chipped stone sample was high, it was suggested that plant processing activities predominated over other activities. From AR-16 coarse material includes basalt, rhyolite (nonglassy), and quartzite.

If AR-16 is a specialized activity site focusing on plant processing, then coarse material should be used to a greater degree than at habitation sites. As unretouched flakes have not been differentiated from waste flakes in a surface collection from AR-16, the entire flake and flake tool sample is combined.

TABLE 5

		Weight	N	Count	N
North Valley	AR-16	93.8	6709.0g	79.5	385
			7153.5g		484
	LA12076 (Classic)	76.8	3474.5g	33.0	291
			4525.0g		882
	Z:1:27 (Late Pithouse)	89.4	16269.0g	69.8	1420
Middle Valley			18193.0g		2033
	LA12109 (Classic)	83.7	3870.0g	46.5	359
			4624.5g		772
	LA676 (Classic)	78.6	22356.0g	69.0	2252
			28459.5g		3266
	LA12110 (Early Pithouse)	92.0	9260.5g	79.0	1253
			10057.0g		1588

Table 5: Frequency of coarse material to total flake material used as chipped stone. Measured by both weight and count. Expressed as a percent.

As suggested, the use of coarse material at AR-16 does exceed the percentage used at each habitation site. However, use of coarse material at AR-16, LA 12110, and Z:1:27 are very similar. These similarities suggest that AR-16 may have been used during the Early or Late Pithouse Period, or possibly during both. LA 12109 follows the same trend in that it exceeds LA 12076, the site with which it likely associates, in the frequency of coarse material used.

Lithic natural availability may be obscuring the variation in raw material use presented in Table 5. Previous survey has established that the availability of raw materials differs for each site. It may prove useful in the next phase of analysis to adjust these figures based on the natural availability of coarse material. Likewise, a sample of chipped stone from sites in the immediate vicinity of AR-16, for which natural availability would be nearly identical, would provide a more accurate test. The results of the above test are certainly not conclusive.

A second test of the activity focus at AR-16 involves the edge angle of tools. It is suggested that large edge angles are more efficient for scraping of plant materials. As a study of tool edge angles has not yet been completed for samples from sites in the Mimbres Valley a more general test is applied here. The flake size index is used as a measure of general flake size. This index is derived by dividing total weight by total count. A high ratio is interpreted as representing large flakes and, therefore, a broad edge angle. Table 6 presents the flake size index for each site.

TABLE 6

		Size Index	N
North Valley	AR-16 for flakes only	14.8	448
	for flakes and tools	16.3	522
	LA12076 (Classic)	5.1	882
	Z:1:27 (Late Pithouse)	8.9	2033
	LA12109 (Classic)	6.0	772
Middle Valley	LA676 (Classic)	8.7	3266
	LA12110 (Early Pithouse)	6.3	1588

Table 6: General flake size index, ratio of total flake and flake tool weight to same total count (except where specified).

The site index computed for AR-16 is substantially larger than that for any habitation site sampled. Again, AR-16 is most similar to the north valley Late Pithouse site, suggesting possible temporal affinity. However, the Classis site in the middle valley is also similar to both AR-16 and Z:1:27. It should be pointed out that a patterned variation in size index is evident for the north valley sites (AR-16, LA 12076, LA 12109, Z:1:27). As AR-16 exceeds in size index the Late Pithouse habitation site, LA 12109 exceeds the Classic habitation site. Both AR-16 and LA 12109 may be specialized activity sites, each in use during a different period.

The primary drawback with size index comparison is that surface collected material can more easily be biased toward larger artifacts. Comparison of AR-16 to other surface collected site samples should clarify the degree of bias in surface collecting. The variation in size index between AR-16 and the other sites in Table 6 should be considered partially a reflection of the difference between surface and excavated collections.

A third test of activity focus involves an estimate of the use of bifacial tools on the site. It is suggested that bifacially flaked tools, especially those with very acute edge angles, are primarily, but not exclusively associated with hunting and butchering activities (Nelson, Rugge, and LeBlanc in press). Bifacial tools are also expected to be in use at habitation sites because of the wide range of activities represented. The number of bifaces present on a site is considered an inaccurate measure of their use as they are more likely transported or curated than would be the debitage from their retouch (Frison 1968:149,154, Nelson, Rugge, and LeBlanc in press). Therefore, the production and use of bifacial tools is best estimated by the presence of biface thinning flakes. Without presenting the data in table form, it can be stated that while all samples from habitation sites contain biface thinning flakes, none of these flakes were recovered from AR-16. Similarly, the LA 12109 sample contained one biface thinning flake from a total count of 772 flakes. Although the absence of biface thinning flakes suggests the lack of use of bifacial tools, the problems of surface collection again arise. These flakes are extremely small and may be overlooked in surface collection more readily than in screened samples.

Conclusion

This preliminary analysis of the sample of artifacts from AR-16 suggests that it is a specialized activity site, possibly similar to LA 12109. Testing for the degree of activity diversity it was observed that the artifact samples from both sites were lacking in

several classes common to habitation sites. LA 12109 does contain slightly more diversity with the presence of one groundstone artifact and slightly more sherds. These may be accounted for by the suggestion that LA 12109 may have occasionally served as a temporary habitation locus, while AR-16 may have been a work area only.

Observing the nature of variation between AR-16, LA 12109, and the habitation site sample, it can be suggested that AR-16 varies in the direction of heavy emphasis on large flakes of coarse material and that little, if any, biface production or retouch is represented. The same can be said for LA 12109 by comparison to the northern valley, Classic Mimbres habitation site LA 12076. It appears, however, that although AR-16 and LA 12109 vary in the same direction, AR-16 is more similar to the northern valley Late Pithouse site, Z:l:27. Two suggestions which might account for the differences are that LA 12109 and AR-16 represent different kinds of activities, both specialized, or that they represent different temporal manifestations of the same general activity focus.

Elsewhere it has been suggested that the direction in which AR-16 and LA 12109 vary from permanent habitation sites represents an emphasis on plant processing (Nelson, Rugge, and LeBlanc in press). More specifically, in the case of LA 12109 it was suggested that LA 12109 was a field house during the Classic Mimbres period. While this suggestion may apply to LA 12109 especially given the presence of low walled cobble structures, there are several alternatives which apply to AR-16. First, AR-16 may be a field house, but dating to the Late Pithouse period. In this case, temporary structures would be less likely to have remained as evidence. Second, as differentiation of tools for processing and procuring wild versus cultivated plants is not possible at this stage of analysis, AR-16 may be a specialized activity site for procuring and processing wild plant materials. Wilmsen (1968, 1970) has suggested that broad edge angled tools are useful for woodworking and heavy shredding. Hester (1972) has suggested agave processing as a possible use for broad edge angled tools. Third, Wilmsen (1970) has also proposed hide scraping as a use for such tools. AR-16 may be a hide processing site. Fourth, the collection procedures at AR-16 may have biased the sample so heavily toward large flakes that the observed trends are the result of nothing more than collection procedure.

In the way of a negative evaluation of the data, it is not likely that butchering or quarrying were the predominate activities at AR-16. There are very few fine edged flakes or tools for slicing and no biface thinning flakes. Frison (1974) states that the quantity of retouch flakes is a useful measure of the number of tools used at a site. The lack of biface thinning flakes at AR-16 suggests a lack of activities involving the use of these tools. Quarrying is not likely because the material which was flaked is pebble to cobble-sized raw material available throughout the alluvium on the floodplain and in the conglomerate composing the first and second bench and adjacent ridges. No outcrops or special localized lithic resources were being worked.

Although determination of the kind of activity focus represented at AR-16 clearly requires further analysis, it appears that the site is likely a specialized activity locus. Incorporating the available survey data, AR-16 is located within a few hundred meters downslope of G145, a small Classic Mimbres pueblo. If these two sites are temporally identical, AR-16 may represent an activity area associated with the pueblo. A similar spatial relationship obtains between LA 12076, a Classic Mimbres pueblo, and LA 12109. It seems reasonable, therefore, that G145 should be more fully investigated if AR-16 is to be more adequately understood.

APPENDIX I

Raw Material Category Definitions

Basalt - A wholly crystalline, fine grained mafic volcanic rock, typically black to gray; matrix consists primarily of lathe shaped crystals of plagioclase feldspar which are usually easily seen with the hand lens. Most specimens classified as basalt are either balastic andesites or andesitic basalts. For the purposes of analysis basalts and andesites are lumped together because they are very difficult to distinguish from each other, but are easily distinguished from rocks in the category "Rhyolite."

Rhyolite - Here defined as an intermediate to acidic commonly porphyritic volcanic rock, containing phenocrysts of sanidine (often irridescent), hexagonal biotite and quartz. These phenocrysts are conspicuous to the unaided eye, but may be absent on small flakes. The matrix is dull to vitreous and contains variable amounts of glass, with colors varying from cocoa brown and light gray to nearly white. Because of the difficulty of distinguishing similar rocks (e.g., latites, rhyodacites) and their similar flaking characteristics, all such rocks are lumped under the category "Rhyolite."

Glassy Rhyolite - Technically a subcategory of rhyolite, but due to the presence of large amounts of glass in the matrix, its flaking characteristics resemble that of obsidian or chalcedony more than they do other forms of rhyolite. Matrix always has a vitreous luster and as with rhyolite, phenocrysts are present, though small flakes may be entirely free of phenocrysts.

Chalcedony - A form of cryptocrystalline silica resulting from the downward migration of ground waters rich in silica. Occurs as pebbles to cobbles in volcanic derived alluvium and as fillings in cavities and cracks in volcanic outcrops. Chalcedony is normally transparent clear to translucent white, but can occur in all colors including black due to impurities. Luster is always vitreous.

Jasper - A variety of chalcedony which is opaque and colored yellow to red to brown. Jasper was treated as a separate category to determine if evidence suggested a particular source for this material.

Chert - A form of cryptocrystalline silica of marine origin occurring as nodules of thin beds in limestones, dolomites and shales. Chert in the Mimbres area is commonly colored pink to light green or gray and the luster is commonly dull to subvitreous. Areas of concentrated impurities and ubiquitous veinlets of quartz reduce the desirability of local chert as a raw material. (Note distinction from chalcedony, see Semenov 1964.)

Quartzite - A very fine to coarse grained sedimentary rock consisting of greater than 90 percent quartz grains which have been cemented together. Colors range from nearly black to very light gray or white.

Dolomite - A fine grained sedimentary carbonate rock. In the Mimbres area colors range from brown to gray and fossil crinoids are common. Some recrystallization is apparent on most local dolomites.

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